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THE SPHERE

Vol. CLXIII No. 2131 WITH WHICH IS INCORPORATED THE GRAPHIC NOVEMBER 23 1940

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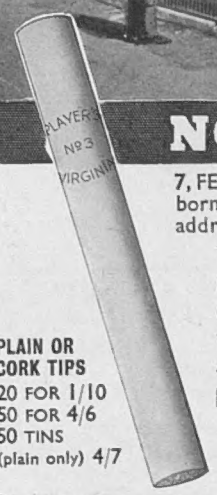

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Volume CLXIII No. 2131

THE SPHERE
With which is incorporated "THE GRAPHIC"
The Empire's Illustrated Weekly
London, November 23, 1940

THE FIRST FIGHTER PILOT TO WIN THE V.C.

Flight-Lieutenant James Brindley Nicolson receives the Congratulations of Fellow Pilots at a R.A.F. Hospital

Flight-Lieutenant Nicolson is twenty-three years of age and one of the tallest pilots in the R.A.F.—he is 6 ft. 4 ins. He joined the Air Force in 1936 and was posted to a Spitfire Squadron the following year: later he was given command of a flight in his present Hurricane Squadron, No. 249. Now it is announced that Flight-Lieutenant Nicolson has been awarded the V.C.—the first fighter pilot to receive this highest of decorations for Valour. It was during his first air fight that he performed the feat which earned him this honour. In combat with a Messerschmitt 110, shell splinters tore through the hood and sent fragments into his left eye: his spare petrol tank was struck and exploded, and the machine was set on fire. Another shell crashed into the cockpit, and still another wounded his heel. Despite that his plane was blazing, he fought the Messerschmitt and forced it into a steep dive earthwards. He then jumped out and parachuted down, feigning to be dead when another Messerschmitt came at him. For two days he was given up by the doctors, so badly was he burnt; but now he has completely recovered, and is visiting his wife and new-born son

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A WAR NEWSLETTER—No. 64

32–34, ST. BRIDE STREET, E.C.4

TARANTO.—The name will be written on Mussolini's heart. It puts the seal on a week-long judgment, a retribution for treachery dramatic in its speed, retribution by land, in the air and on the sea. In a few brief hours Italy ceased to be a Great Power, a position which under the later Mussolini she is not qualified morally or materially to fill. This glorious feat of the Navy and Air Arm is a crowning mercy and miracle which has come to us after a year of grievous set-backs and bitter disappointments. When Italy treacherously and for pure greed stabbed France in the back, she opened the back door to the enemies of the Axis and all its evils and we have not been slow to snatch that God-sent opportunity to strike at the gaping joint. Heavens, what a change that wonderful week made in the conditions of the war, what a change of heart in wobbling "neutrals," what incalculable repercussions from Lisbon eastwards to Tokio. What a stimulus to all who long for a British victory and the end of aggression and tyranny. It is a transformation at the best; put at the lowest, a glorious *mi-carême*. The writing on the wall is clear to read in German and in Italian. The lesser bandit is weighed in the balance and found wanting—and is transformed into the penitent thief. If the truth can find entry into Berlin and Rome, it may well have spoiled two diplomatic joy-parties, and I think, too, it has given Virginio Gayda a stomach ache, the result of eating his too, too rich words.

THE ICE-CREAMS IN HOT WATER.—Soon enough after Mr. Churchill's promise, the Italians got a taste of the medicine which Gayda and Co. had lightheartedly boosted so long. The Duce Borgia tasted his own poison cup. On Armistice Day an Italian air fleet of fighters and bombers came across the Channel to show the Nazis how the business of destroying England should be done. Of the bombers only a small fraction returned, in no mood to boast. One British squadron did the business in a few minutes. It wasn't even sport. It was like knocking fowls off a perch with a scattergun. The same day came the news of a really important Greek victory with casualties to the crack Italian regiments amounting to several thousand men and a mass of material. And at the same time the allied air forces were pounding Italian and Albanian ports and bases with good effect. No news had come for a long time so heartening to Britain. No doubt the Italians will strike back. They have great resources and able technicians and strategists in their big armies. But every blow which the Allies strike them, every wound they inflict on the perjured race, will be balm to us and it is my prayer that those blows will be redoubled, and never long withheld. With Mussolini, now before all, *il faut en finir*. It is bare justice and sound strategy. The Duce and his cringing sycophants deserve the worst we can give them.

"YOU CAN 'AVE ROME."—A well-known trainer of Newmarket was once persuaded to tear himself away from the sporting joys of England in its great days of privilege, and to accompany his wife on a tour of Italy. He returned as soon as he decently could and was interrogated by his boon companions. "Well, Bob," they asked, "how did you enjoy the glories of Rome?" "Rome?" he replied. "Rome? You can 'ave Rome." One of the great handicaps to us in this present war is that, whereas our leaders retain a civilised respect for the dictates of humanity and the conventions of civilisation, Germany and Italy are led by men who long since have shed any standards of decency, humanity or culture which they may have been born with or acquired. To them force is the only weapon worth wielding, so long as it is not met by equal force. Terrorisation and destruction are good in themselves, so long as they achieve the purpose of enslavement. Nothing is sacred in human life or human treasure, so long as destruction can impose the dictators' will. It is unfortunate that Britons feel for Rome and its ancient glories a great part of the veneration which they feel for the treasures of art to be seen (or no longer to be seen) in London. That is the penalty of culture and the handicap which civilised people suffer when fighting with Huns. When Mussolini boasted of his airmen's part in wantonly destroying London, he laid Rome open to the retaliation of the British Air Force. Whether he banks on the restraining influence of our civilisation—gambles on it—we do not know. Justice and logic demand that Rome should suffer as London has suffered—subject only to this saving grace for Rome that our airmen are trained in the beastly business and can find their targets. Rome is not wholly a museum of art treasures and glories. Vast tracts of it are modern and industrialised. It has many military objectives. Berlin is a hideous wen with few traditions worth preserving. Rome, long before Mussolini was even a possibility, was a centre of world culture, and Mussolini, for all his work in Rome, has not added to the city's cultural influence. The grandeur that was Rome has gained nothing from Mussolini. Mussolini's Rome deserves the fate of Hitler's Berlin, and a day will come when both cities will be glad to expunge any memories of those two blackguards which may remain when this war is over.

THE PRIME MINISTER INSPECTS OUR BULWARKS AGAINST INVASION: Mr. Winston Churchill has just made a further inspection of some of our first-line defences on the coast. It will be remembered that, only recently, the Premier reminded the country that the possibility of invasion by the Germans is by no means past. With his customary energy he made a thorough inspection of the entire zone and, once more, saw for himself that this country is indeed a "veritable island fortress." During his visit Mr. Churchill was accompanied by Admiral Sir Dudley Pound, First Sea Lord, and General Sir Alan Brooke, C.-in-C.

RUSSIA AND NAZI DIPLOMACY.—In this matter let us clear our minds and consciences of cant and hypocrisy. If we could by our diplomatic efforts secure Russia as our ally, more or less actively on our side, we should be thankful. We should flatter her greatness and the might of her arms, and we should forget all about her own monstrous aggressions and bad faith. That, I think, is truth, the bare and cynical truth, a thing possibly justifiable in a death struggle. We have not succeeded. Hitherto the Nazis have had such successes as may be in diplomatic efforts to win Russia, and they deserve "credit," since Russia should by rights loathe the Nazis with undying hatred for past insults. But even Nazi efforts have been very partial and dubious. It is not possible to avoid the belief that Soviet policy must favour neutrality as long as possible, as long as the blessed possibility of watching all the Great Powers, her rivals and common enemies, being slowly bled white in a death struggle. Stalin and Molotov cannot fail to see the strength of their position, so long as they remain neutral. Every day the power of Germany to attack and trounce Russia and to snatch from Russia the corn lands she covets, grows a little less. Britain, with a tremendous expanse of treasure and effort, is fighting to save Russia from Nazi spoliation. It is good, and the good must continue as long as possible, for none knows better than Stalin how much paper and how little punch compose his "invincible" Red Armies and Air Fleets. Finland showed him that. But diplomatic exchanges and pious platitudes signed and sealed are another matter. Words mean nothing vital, as in the war of words and treaties and conventions and solemn assurances the Nazis are our masters and the Russians are our masters. Beside them, we are mere babies at the paper game, and happily we seem at last to have taken our failure philosophically and accepted it that only hard facts can make binding and effective diplomatic strokes. We have learned at last that nothing will bring us strong and declared allies in Europe save hammer blows driven home on the dreaded dictators. The Nazis, however, still pursue and believe in the paper game, and their technique never varies. Each approach to a treaty of alliance or new bloc or new world-order is heralded with inspired propaganda announcing another deathblow at Britain, another Settlement of Europe, another reign of Saturn for a troubled world. Then something or other is signed and sealed and vaguely published and . . . nothing much happens. The flags are out, the bells rung and Ribbentrop gets another star or pat on the back, and the war goes on with the same partners waging it, and a promise perhaps of a larger delivery into Germany of essential oil or other products of war . . . some day. In short, whatever hopes the Nazis may have of Russian aid, whatever diplomatic triumphs she may announce that she has won from Molotov, we *know* that Stalin and Molotov must qualify for Bedlam before they exchange their present God-sent neutrality for any active participation in the war, which (in their view) is slowly destroying the power of all their (equally) bitterly hated rivals in Europe.

THE EARTHQUAKE IN RUMANIA.—A grievous affliction has fallen on Rumania from a visitation of nature. The earthquake has done to the country in one hour more destruction than could have been accomplished by six months of ruthless and indiscriminate bombing by a hostile power possessed of a vast modern air fleet. That is an interesting and in its way a comforting thought. Beside nature's, man's power to destroy is the power of a pigmy still. The destruction done in Rumania is on a par with, but perhaps less localised than, that which befell Turkey. That fact must have estopped the more superstitious in Allied countries from a tendency to whisper of heaven's punishment on the guilty and the cowardly. Perish the thought that Britons should use such superstitious and small coin. For all humanity, vile and innocent, is but a colony of ants under the heel of a mighty power, for weal or woe. But in Rumania superstition still survives and is general among the unlettered, and it is small wonder if the grievous visitation has appeared to a great part of the population as a judgment on their Government and a punishment for their own lethargy in giving power to a Government and a slavery which they have richly deserved. The only cause for congratulation which could arise in British hearts regarding this disaster would be if it became known that a number of Germans and a vast amount of petrol (or its raw material) had been destroyed. Germans and petrol are among the first three of the curses which have fallen on the human race. I hope we shall send what help may be possible to us for distressed Rumanians.

BOMBS AND WATER RAIN DOWN.—I took a day off last Saturday and shot some pheasants and partridges. It rained most of the time and blew a gale from the south. But it was a pleasant change. We shot a covert which I have known and shot for over 40 years. The guns are still placed in the same positions which they occupied in 1895. Always it was a difficult stand, for the "guns" were exposed *above* the convert and the pheasants would tend to break back. *This* time it was different. With mathematical accuracy an 8 ft. deep and 14 ft. wide cavity had been neatly drilled at the point where each gun is wont to stand, completely concealing him from view. The work was done by an Italian or German airman and represented a "stick" or so of eleven bombs dropped round the angle of this covert which stands on a desolate hill in a rural area remote from habitation or military objectives. A kindly gift and a very expensive one for the enemy! Can you beat it? A word on rain of another kind. My melancholy forecast made in September has been amply fulfilled so far. I prophesied that the last three months of the year would be wet, and would need to be wet if the average rainfall of the year was to be made up. I anticipated an average monthly fall of 5 ins. October produced its quota of 4.80. The first half of November alone produced 5 ins. of rain, and I doubt not there is more to come.

THE OLD STAGER

The SAVAGERY at COVENTRY

German Methods of Warfare Brought to a British Town

IN THE CENTRE OF THE CITY: FORMERLY A BUSY SHOPPING CENTRE—A PICTURE TAKEN IN COVENTRY THE MORNING AFTER THE VICIOUS ATTACK BY GERMAN DIVE-BOMBERS

We have all heard of how German dive-bombers wiped out the town of Guernica in Spain and deliberately wrecked the cities of Warsaw and Rotterdam, killing right and left and wreaking such havoc as to make civilisation gasp. The same methods have now been used against Britain. During the night of Thursday, November 14, 2,000 high explosive bombs and thousands of incendiaries were showered on the City of Coventry. 250 people are known to be killed, and about 800 seriously injured. The city itself consists of masses of rubble—Cathedral, famous public buildings, cinemas, shops and houses have all been obliterated, and in places it was almost impossible to tell which was roadway and which were buildings. This destruction was carried out by the dive-bombers, once the pride of the inhuman *Luftwafe*, which, however, can now only be used under cover of darkness. The boasts of the Germans over the radio concerning this wanton display of typical brutality were soon answered by the R.A.F. Large forces twice attacked the city of Hamburg and wrought terrific destruction there.

IN ONE OF THE STREETS OF COVENTRY THE MORNING AFTER THE RAID: FIRES ARE STILL SMOULDERING AND HOUSES AND SHOPS ARE A MASS OF RUBBLE. THE ATTACK BY THE GERMAN RAIDERS WAS ONE OF THE HEAVIEST YET EXPERIENCED IN BRITAIN

AFTER THE RAID ON COVENTRY

The Scene of Desolation Inspected by the King

H.M. THE KING (ACCOMPANIED BY MR. HERBERT MORRISON AND BY CITY DIGNITARIES) WALKS THROUGH THE SHATTERED AND TORN STREETS OF COVENTRY DURING HIS TOUR OF INSPECTION ON SATURDAY LAST

ONE OF THE STREETS WHICH DID NOT SUFFER SO SEVERELY AS MANY. AT LEAST ONE OR TWO WALLS ARE STANDING, AND THE ROADWAY CAN STILL BE SEEN!

DAY AFTER DAY FOR MANY YEARS THE CITIZENS OF COVENTRY WALKED THROUGH THIS STREET, A WELL-KNOWN AND BUSY SHOPPING CENTRE. NOW THE STREET HAS BEEN REDUCED TO A MERE HEAP OF RUBBLE

A SERIES OF SMALL BOMBS FELL IN THIS STREET, SPARING SOME OF THE HOUSES FROM THE SERIOUS DAMAGE ENCOUNTERED ELSEWHERE, BUT WRECKING CARS IN THE ROADWAY

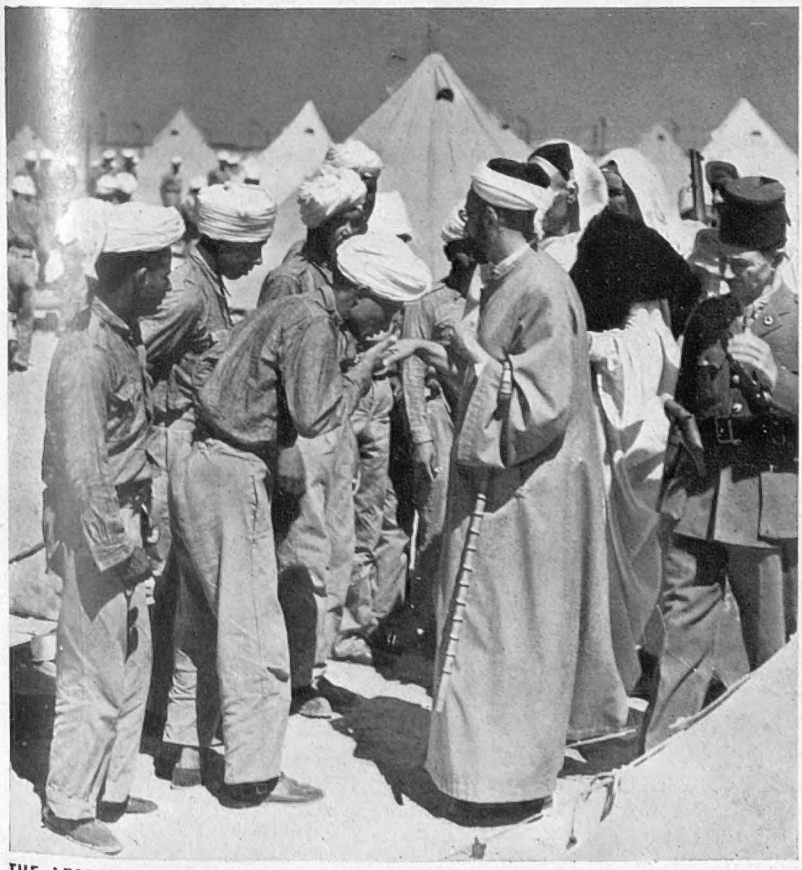
AN AMAZING SCENE ON FRIDAY MORNING, THE DAY AFTER THE RAID; THE ROADWAY AND PAVEMENT HAVE ALIKE BEEN OBLITERATED, AND PEDESTRIANS HAD TO CLAMBER OVER BRICKS AND BAULKS OF TIMBER THROUGH STILL SMOULDERING RUINS

OWING TO THE DAMAGE TO WATER MAINS, THE INHABITANTS OF THE CITY HAD TO TRAVEL GREAT DISTANCES TO FETCH PAILS OF WATER FOR THEIR DOMESTIC NEEDS

The viciousness of the air attack on Coventry beggars description; according to one report, no fewer than 1,000 buildings have been damaged, "among them factories, schools, hospitals, the post office, police station, and hundreds of red-brick villas." Another report, however, declares that the Germans "failed utterly" to destroy any of the industrial plants. But the damage to the city and its shopping and residential centres is overwhelmingly apparent on all sides

PREPARING for ACTION in the WESTERN DESERT

STR AMS OF NEWCOMERS TO EGYPT ARE ARRIVING—RE A DETACHMENT OF NEWLY-ARRIVED TROOPS ARE SEEN LEAVING THEIR MP FOR A ROUTE MARCH: If the Italians should attempt an attack on pt—and there is no apparent indication that they intend to do so, what n Greece and Taranto and the British Navy and R.A.F. to attend to—they will find that country well prepared for them. British forces have been reaching the Western Desert in a steady stream, and all branches of the Services have been reinforced. Marshal Graziani will find Egypt a much more difficult proposition than his infamous "pacification" of Libya some years ago, when his methods against the natives were condemned by the whole civilised world



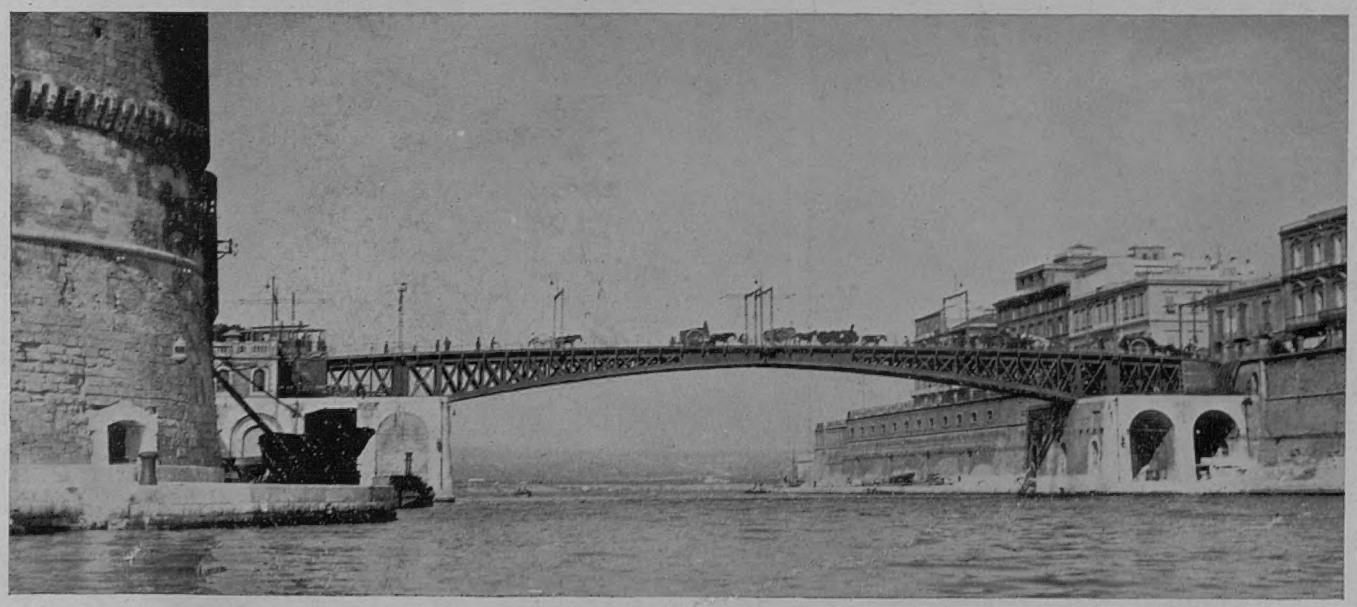
THE LEADER OF FREE LIBYA: Brutally oppressed by the Italians and now pressed into the fight against Britain, the people of Libya are burning to throw off the Fascist thraldom. Their leader, Sayed Idris el Senussi (the Senussi are a high religious desert order), has escaped into Egypt. When Libyans were captured by British troops, he visited them and received their homage

LIEUT.-GENERAL SIR HENRY MAITLAND WILSON, COMMANDER-IN-CHIEF IN EGYPT: Watching the unloading of ships at the docks. New equipment is flowing into the country at a great rate; the convoys are finding little resistance during their journeys through waters which the Italians claim as their own; and wharves and jetties in Egypt are being piled high with their cargoes

Drawing by Roland Davies

GOING INTO THE ATTACK: FAIREY "SWORDFISH" BEGIN THEIR WORK OF CRIPPLING THE ITALIAN NAVY

In this drawing "The Sphere's" artist has depicted the probable method of attack carried out by the Fleet Air Arm. It is thought that Skua dive-bombers went in first, carrying loads of one 500-lb. bomb apiece. As their bombs were dropped, and the aircraft lightened in consequence, the Skuas immediately became deadly fighters, their five machine-guns ready to deal with enemy aircraft if they should have ventured to attack. As the Skuas zoomed upwards the deadly Swordfish came in for the real attack. Each carried an 18-in. torpedo slung below the fuselage. In the moonlight, ignoring the balloon barrage and the heavy anti-aircraft fire guarding the Italian vessels, the Swordfish dropped down low over the harbour and at less than a mile from the immobilised capital ships loosed their missiles. The whole world (with the exception of the Italians, from whom the truth of the engagement has been withheld) knows now with what results!



Above—**THE BRIDGE AT TARANTO HARBOUR**

Separating the outer (commercial) harbour from the inner (naval) harbour is this swing bridge. Behind it the capital ships of the Italian Navy lay snugly at anchor, with balloon barrage and anti-aircraft guns as protection. Further pictures of the action at Taranto are given on pp. 248-251 of this issue

On right—**THE MORNING AFTER AT TARANTO: THE SCENE OF DESOLATION IN THE INNER HARBOUR**

—Drawing by Montague Dawson

The ship in the foreground is a battleship of the Cavour class; this was beached, with her stern under water and listing to starboard; next to her is the Littorio class battleship, down at the bows so badly that her forecastle is under water; whilst beyond is another warship—one of the capital ships wrecked by the torpedo attack. Here, then, are the pride of the Italian Navy, wrecked with no hope of immediate repair; and with them have been wrecked all hope of Italian supremacy in the Mediterranean

The ATTACK on TARANTO: Where Italian Naval Aspirations Were Wrecked in One Smashing Blow by the British Navy on November 11. *(See also pp. 248–251 of this Issue)*

Armistice Day, 1940, will live long in Naval annals —and for the Italians it will mark one of the most decisive days in the history of their Fleet. This Fleet was to have challenged British supremacy in the Mediterranean ; it was to have immobilised a large number of our vessels until such time as the Italians were ready to go into action after months of skulking in port.

The Fleet Air Arm, however, have changed all that. At one blow they have crippled half the capital ships possessed by Italy and wreaked damage to others such as no naval man would have thought possible by means of this Arm.

On other pages of this issue we give further details of this decisive action : here we give our artists' reconstruction of how the attack was carried out by Swordfish aircraft and the scene of desolation on the beach at Taranto the day following the action.

THE TYPE OF AIRCRAFT AND THE TYPE OF TORPEDO WHICH ACHIEVED SUCH WONDERFUL SUCCESSES AT TARANTO

The Swordfish employed in the attack are built by the Fairey Company, who also produce the Battle and other fine types of aircraft. It has a speed of just over 150 m.p.h. and carries its deadly 18-in. torpedo in the manner shown. The aircraft taking part at Taranto were flown from the deck of aircraft-carriers, of which there are a number now in the Mediterranean co-operating with the Royal Navy

THE NEW LEADERS OF THE R.A.F.

AN AIRMAN AS C.-IN-C. IN THE FAR EAST: AIR CHIEF MARSHAL SIR ROBERT BROOKE-POPHAM: For the first time Britain is to have a C.-in-C. for the Far East, and an airman has received the appointment. Sir R. Brooke-Popham is sixty-two years old; he is the only survivor of the 1912 Air Battalion which was the foundation of the R.F.C. and then the R.A.F. He entered the Army in 1898 and joined the R.F.C. in 1912. During the years 1937–9 he was Governor and C.-in-C. of Kenya

MAJOR-GENERAL R. H. DEWING, Chief of the combined staff of the different services in the Far East. His job will be to work under the new C.-in-C. and to co-ordinate the activities of the British forces in China, the East Indies, India and the other regions involved in the new command. General Dewing is forty-nine years of age; he joined the Royal Engineers in 1911, and during his twenty-nine years in the Army has seen service in Mesopotamia, Persia, India and Canada

TO DIRECT THE NEW AIR COMMAND TO CO-OPERATE WITH THE ARMY: Air Marshal Sir Arthur Barratt, who has been appointed to take charge of a scheme which has been prepared for co-operation between the Army and the R.A.F. Air Marshal Barratt is fifty years of age; he was formerly C.-in-C. of the British Air Forces in France

IN COMMAND OF THE BRITISH FORCES IN GREECE: AIR COMMODORE J. H. D'ALBIAC, D.S.O.

Air Commodore D'Albiac is directing the R.A.F. in Greece and certain military forces in that country as well. He is forty-six years of age; after service in the Army and Royal Marine Artillery, he was seconded to the R.N.A.S. He is a graduate of the R.A.F. Staff College, and he has seen service in India, Egypt, Transjordan and Palestine

AIR VICE-MARSHAL A. T. HARRIS, the new Deputy Chief of the Air Staff, is forty-eight years of age. He was born at Cheltenham and joined the R.F.C. in 1915; after the war he served in India and the Middle East. In 1938 he was a member of the Air Ministry Mission to the United States and Canada; and later he became an Officer R.A.F. in Palestine and Transjordan

AIR VICE-MARSHAL O. T. BOYD, Air Officer Commanding the Balloon Command since its formation in 1938, is to be Deputy to the A.O.C-in-C., Middle East Command. He is fifty-one years of age and was transferred to the R.A.F. from the Regular Army in 1918. He won the M.C. for conspicuous gallantry, and has held R.A.F. commands in Mesopotamia and Aden

THE NEW FIGHTER CHIEF: Air Vice-Marshal W. S. Douglas, the new Air Officer C.-in-C., Fighter Command, is forty-seven years of age. He became a flying officer in the R.F.C. in 1915 and commanded two fighter squadrons: he received the M.C., D.F.C. and Croix de Guerre and was three times mentioned in dispatches

AIR MARSHAL E. L. GOSSAGE, who takes over the Balloon Command, is forty-nine years of age. He was formerly Air Member for Personnel on the Air Council. He was born at Toxteth Park, and educated at Rugby and Cambridge. In 1930–31 he was Air Attaché in Berlin

AIR VICE-MARSHAL P. BABINGTON, promoted to Air Marshal (acting), is forty-six years of age and was born at Marylebone. He is the new Air Member for Personnel at the Air Ministry, where in January last he was appointed Director of Postings. He thus succeeds Air Marshal Gossage

THE PROBLEM SUMMARISED: AIRCRAFT FROM BREST, AND OTHER GERMAN-OCCUPIED BASES, CAN NOW THREATEN SHIPPING OVER A WIDE AREA

Mr. Churchill has commented on the "most heavy and grievous burden" which has been placed on our shoulders owing to the fact that we cannot now use the South and West coasts of Ireland to refuel our flotillas and aircraft and "thus protect the trade by which Ireland as well as Great Britain lives." This diagram presents the whole problem in vivid form. Owing to the occupation of the French coast, German aircraft and submarine and surface craft can harry British vessels over a wide area in a manner which was not possible in the last war. The naval bases in the South and West of Eire would allow our vessels to put a check on the marauders, but this, Mr. de Valera will not permit, insisting on a neutrality which, with other nations, has proved their complete ruin. In this diagram these bases are clearly indicated: also indicated are distances from Brest, showing how German aircraft are even now operating in the Western Approaches

The MENACE to BRITISH SHIPPING

The Problem of the Lost Naval and Air Bases in Eire: Described by FRANK BOWEN

THE question of the naval bases in the south and west of Eire is becoming more and more important with the heavy losses sustained by merchant shipping through submarine and air attacks far out in the Atlantic, and the sinking of the £3,000,000 Canadian Pacific liner *Empress of Britain* has brought things to a head. The whole country is behind the Premier in his remarks in the House of Commons concerning the use of the Eire bases for refuelling our aircraft and anti-submarine flotillas. The pity is that the subject was not fully ventilated before.

Previous to the Agreement of 1938 the Irish bases were of the greatest value to British naval plans for protecting the western approaches. Berehaven, in the extreme south-west, was not a popular base with the personnel of the Navy, for there was little there beyond a beautifully protected natural harbour which offered ideal facilities for gunnery work and was the most westerly point from which Atlantic convoys and patrols could be arranged. When the British Navy left the area it was a sad day for the local peasantry who had relied on the generosity of the seamen, officers and bluejackets alike, for all the luxury and comfort that their lives contained.

In the north the port and minor base of Buncrana on Lough Swilly guarded the approaches to the Clyde and to the Irish Sea through the North Channel. During the late war the Grand Fleet used Lough Swilly as a base while the defences of Scapa Flow were being perfected—it was close handy that the *Audacious* was sunk—and in the latter stages it was used by about thirty destroyers on anti-submarine duty in addition to sloops and a large number of trawlers, drifters, and other small craft which maintained a ceaseless watch and which were very successful in keeping down the number of enemy submarines which contrived to get at the bottle-necks of steamer traffic.

Queenstown, or Cobh as it is now called, was by far the most important and before the last war had been used as a British naval base for centuries; the Fleet's demand for fresh meat and vegetables meant great prosperity for the local population. In the nineteenth century the Cove of Cork, splendidly protected by Spike Island from all forms of attack then known, was developed into a permanent minor base and Haulbowline Dockyard, although small, was well adapted for the minor craft which were normally based on it and provided employment which was a godsend to the City of Cork.

At first it was used in 1914 for the cruisers maintaining a patrol against raiders and blockade-runners far out in the Atlantic but as the U-boats got bigger and more efficient, and operated much farther west, it was used very largely for destroyers, sloops, minesweepers and the smaller types of hunting craft. Vice-Admiral Sir Lewis ("Lulu") Bayly was put in command and was a striking success.

The trouble was then, as now, that there were not nearly enough ships for the work. The area of the Queenstown anti-submarine destroyer patrol was 25,000 sq. miles and there were seldom more than a dozen destroyers available for it when Germany

(Continued on following page)

ON THE WESTERN APPROACHES TO BRITAIN

A British Liner Approaches the South-West Coast of Ireland

—Drawing by Montague Dawson

As the liner comes up towards the Channel, the threatening periscope of an ocean-going U-boat appears above the dark waters off the South-West of Ireland. It is here that the German submarines have been operating from bases on the West coast of France. These bases, and particularly Lorient, have been the subject of heavy attacks by the R.A.F. during the past weeks. With Britain using her former Irish naval bases this is a menace which could be combated

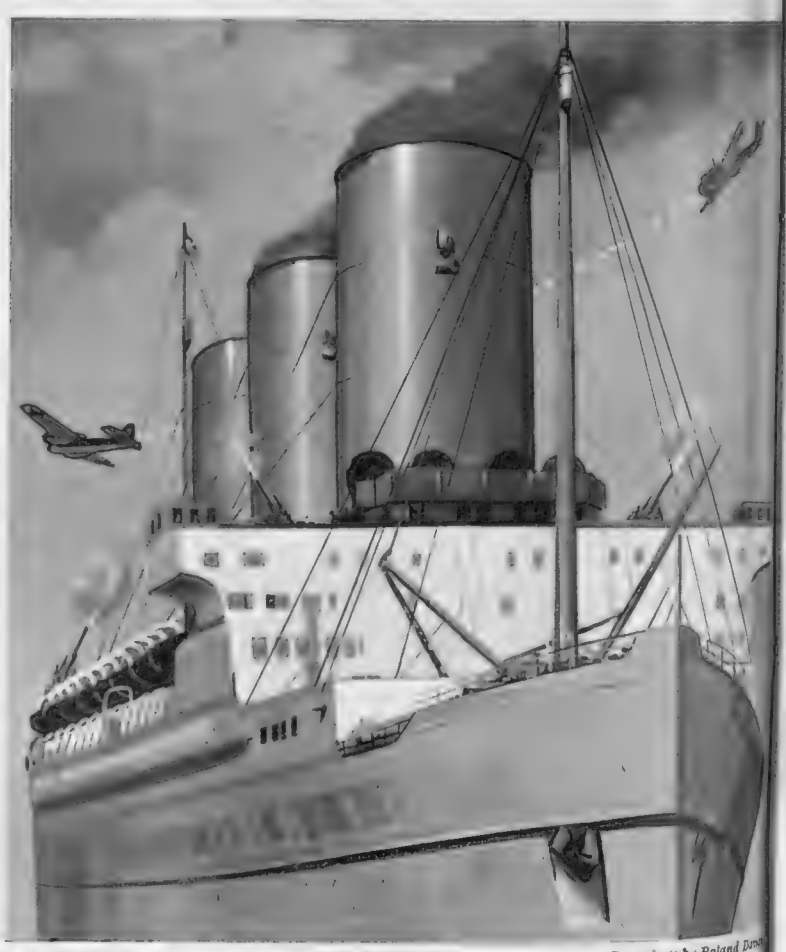
(Continued from preceding page)

declared her unrestricted submarine war early in 1917, which meant that the flotilla was grossly overworked and many duties fell to the smaller craft which were not designed for them. There were six trade lanes leading into the area and the U-boats were always trying to draw the destroyers out of the bottle-neck, where they had sunk a number of Germans, by attacking these lanes in turn 200 or 300 miles out in the Atlantic.

The arrival of the American destroyers later in the year made a huge difference and some of their best work was done in the Queenstown area. About three dozen of them were on the station at one time, with the depot ship *Melville* which relieved the dockyard of practically all their repairs, and these finally included a number of the flush-deckers which have lately been transferred. They were under the command of Admiral Bayly and he could never ask for keener or more loyal subordinates, while they learned to love him dearly.

When the Treaty with the Irish Free State was signed, Queenstown, Berehaven and Lough Swilly, with their defences, were reserved to the British as Treaty ports, although Haulbowline Dockyard was closed down. In the Agreement of 1938 the administration and defence of these ports was handed over to Eire. It was always understood that the Navy was to have their use in war-time, but when the Anglo-German situation became so strained in the following year the Eire Government declared its absolute neutrality and proclaimed the legal letter of the Agreement. When the question of German submarines using Irish inlets was raised in the House of Commons at the end of last year, Mr. Churchill, as First Lord, pointed out that the Navy could not act inside the Irish three-mile limit under the 1938 Agreement.

The loss of the Irish bases is a very serious matter for the British, particularly since the enemy has had possession of north-west France, for long-distance aeroplanes and corsair submarines are operating very much farther afield. Whether this is due to the Germans having built bigger U-boats recently or whether it is because they have obtained the services of the big Italian ships has not been published.



THE PROBLEM OF DEFENDING A LARGE PASSENGER, OR CONVERTED, LINER FROM AERIAL ATTACK IS A DIFFICULT ONE

Drawings by Roland Davis

During the past few weeks a number of attacks have been launched by German aircraft on big British vessels. With the Germans in command of the whole coastline of France, it is easy to understand how these attacks are made: to many, however, it has been a matter of speculation as to why the Germans have been able to sink some of the big British vessels attacked. But, as the drawings show, it is easier to defend a small vessel—such as an armed trawler or a minesweeper—than these heavy vessels of very great tonnage. The very considerable top hamper of huge funnels, upper decks and bridge masks the target in such fashion that each gun has an effective range of fire only through a small arc. There is nothing like the wide, clear sweep of sky open to the gunner at the bow or stern of smaller craft

The MENACE to BRITISH SHIPPING

EIRE "PROTECTS" HER COAST: This picture comes from Ireland and purports to show the manner in which neutral Eire protects her lonely coastal roads against possible enemies. The men in this view are described as being members of the "Eire Security Force"

Drawing by E. G. Lambert

LORIENT—GERMANY'S SUBMARINE BASE IN OCCUPIED FRANCE WHICH HAS BEEN REPEATEDLY BOMBED BY THE R.A.F. DURING RECENT WEEKS

Following up their colossal successes at the Invasion Ports, the Royal Air Force have now turned their attention to the submarine base at Lorient. Here the Germans have concentrated numbers of their underwater craft for attacks on British shipping in the Channel and off the Irish coast. A recent communiqué mentioned the presence of no fewer than twenty-six U-boats at this port; five of them were destroyed in one attack. In some cases attacks have lasted for three hours on end, and on occasion the port has been attacked more than once in the same night. The target areas have included the dry dock, shipbuilding slipways, power stations, naval workshops, and the railway approaches. This is perhaps the most effective method of dealing with the submarine menace, by bombing the raiders at their base!

It has to be remembered that in war on commerce the advantage is always with the attacker, who can choose his time, while the defending force has to maintain a ceaseless patrol and always remain on the alert. This means an immense fuel consumption, and with destroyers, who burn their oil at a great rate, or escort vessels, whose bunker capacity is limited, it demands refuelling bases as near the open sea as possible.

Apart from the patrolling forces the inshore convoy can only work a certain distance from its base, for every ship must always have sufficient oil to be able to engage in a submarine hunt at full speed, and the ocean convoy is terribly handicapped for lack of tonnage. Seventy cruisers were regarded as the minimum for national safety; that was cut down to fifty for political purposes when we were trying to persuade the other nations to disarm, and at the outbreak of war we only had forty-five in the Royal Navy, including those on foreign service but excluding those owned by the Dominions and those converted to anti-aircraft duties. Since then the collapse of France, on whose cruiser fleet we were largely relying, and the necessity of maintaining a number of cruisers in the Mediterranean as Italy possesses so many of them, has made the matter infinitely worse.

The fifty American destroyers are a great acquisition to our anti-submarine forces; we want at least another hundred fast cruisers if the enemy is not to score such unpleasant successes as the *Empress of Britain* from time to time. It is an impossible aspiration, and even if we had them there would always be the chance of an attacker slipping through. The annihilation of the enemy fleet at Trafalgar did not prevent an enormous number of British merchant ships being lost to French small craft and privateers between 1806 and 1814.

The loss of many merchantmen is inevitable in any war in which we may engage, but during the present struggle the sinkings have been fewer than our authorities had regarded as inevitable and infinitely fewer than the enemy had confidently reckoned upon.

HOW THE BOMB-AIMER ATTACKS

The Aiming of a Bomb is a Science, for which One has to be Specially Trained. Here is a Description of How this Task is Carried Out, with the Help of Scientific Instruments of Great Complexity

BOMB aiming as a science has progressed far since that early evening of September 1, 1914, when an unnamed officer of the Royal Flying Corps flying over the woods north of Villers-Cotterets, for the first time took two light bombs from his pockets and flung them optimistically over the side.

Modern bomb-sights are a marvel of complexity and a marvel of accuracy although the time has not arrived when—as claimed in the U.S.A.—a bomb-sight can make possible the hitting of a barrel from 20,000 ft. As in so many other things, theory and practice are very different matters.

The complexity in bomb aiming is brought about by the number of variables with which the aimer has to contend. There is the speed of the aeroplane through the air; there is the height of the aeroplane over the ground, there is the speed of the wind which drifts the aeroplane off its true course. There is the rate of fall of the bomb, gradually increasing with height up to its terminal velocity. And finally there is the height of the target above sea level.

Most of these factors are taken care of automatically by the modern bomb-sight reducing the work of the bomb-aimer to a minimum. For instance, he reads off his air-speed and his height above sea level on instruments in front of him. From the information they give he is able to fix these variables on his sights. It will readily be appreciated that with all this mathematical calculation to be performed by the bomb-aimer, the various R.A.F. selection boards are rightly insisting on selecting only those men for this job who possess the necessary education and mathematical grounding to understand the various factors which must be taken into account when bombing.

Let us for a moment analyse the various problems with which the bomber has to contend to make reasonably sure of hitting his target. This refers to precision high-level bombing only. Dive-bombing is fundamentally different.

First of all, there is the speed of the aeroplane. The faster the machine flies at any given height the earlier the bomb must be released. This is because the bomb slows up only slowly after it has left an aeroplane, so that when the aeroplane is more or less directly over the target the bomb itself is only 100 yards behind the aeroplane if dropped from a height of 10,000 ft. or 190 yards behind from a height of 20,000 ft.

Then there is the height of the aeroplane above the target when it releases the bomb. The higher the aeroplane, again the earlier the bomb must be started on its way. This is because the bomb does not drop vertically, but follows a curved path and only slowly loses the forward speed imparted to it by the machine. The height of the aeroplane influences the speed of the bomb as it slowly accelerates to its maximum velocity.

An interesting fact is that almost any bomb reaches its maximum velocity in about 17,400 ft. of fall. Some bombs fall faster than others. For instance, the streamlined form of the German bombs is not so well developed as that of our own bombs. Thus a German bomb rarely exceeds about 600 m.p.h. whereas our own have a terminal velocity of roughly 720 m.p.h. That means that a German bomb takes about 48 seconds to fall 20,000 ft. while British bombs strike more swiftly, taking only about 30 seconds to fall the same distance. (It is interesting, in this connection, to compare these velocities with that of a pilot during the first stages of his descent after baling out and before his parachute has opened; his speed — without parachute — never exceeds 120 miles per hour!)

The point is only of academic interest except that the faster bomb has the greater penetration and that because, in each instance, the speed is slower than that of sound—770 m.p.h. at sea level—the sound of the bomb must precede it in every instance. So you can always hear a bomb coming, even directly at you. This point may prove of interest to the many people who have carried out endless argument as to whether the bomb or its whistle comes first!

Wind speed affects bomb aiming only in so much as it alters the speed and relative direction of the aeroplane over the ground. This is most easily demonstrated by a triangle of velocities.

Now let us follow a run over a target by a British bomber and see how the job is done.

The bomb-aimer goes forward to his platform, which in a heavy bomber is just behind the nose turret. He lies full length on the floor and watches the ground flow past far beneath his window in the floor. He notes the height, the speed and the temperature and makes adjustments for them on his bombing apparatus. Then, looking through the drift wires of his sight he checks accurately the exact course of the bomber, which may be inclined slightly off its path by a strong side wind.

The bomb-aimer sets his instrument to take account of this third variable. Each adjustment, for speed, for height and for drift, in effect inclines the sighting apparatus so that the focal point of the target appears earlier or later to the aimer, giving him the instant for release of his bombs.

If possible, a crew likes to make a trial run over the target first to check up on all these points and then come back and make the actual bombing run, using the data of the sighting run. Slowly the bomb-aimer sees the objective come into his sights and, when it reaches the right point, pressure on a button releases the bombs to fall directly at the target.

The care and accuracy with which this work must be done, the long training and detailed practice, all emphasise the skill of the R.A.F. and the lack of training of the *Luftwaffe*.

Precision-bombing attacks made in a slight dive must not be confused with true dive-bombing attacks made at angles in excess of 40 deg. In dive-bombing attacks the whole aeroplane is aimed at the target and the bomb released a fraction of a second *after* the pull-out has begun. This lag is to launch the bomb with the direction of the aeroplane and to counteract the force of gravity which would tend to pull the bomb from its slight angle of attack. If the dive-bombing attack were truly vertical, this would not be necessary, but in practice dive bombing is rarely done at angles in excess of 70 deg.

The Germans have invented an ingenious apparatus for use on the Junkers Ju 88 two-motor dive bomber for automatically releasing the bomb and pulling the aeroplane out of the dive. All the pilot has to do is to press a knob when he is in a dive and aiming at the target. Hydraulic relays then shut the dive brakes, release the bomb and turn up tabs on the elevator which straightens out the course of the raider.

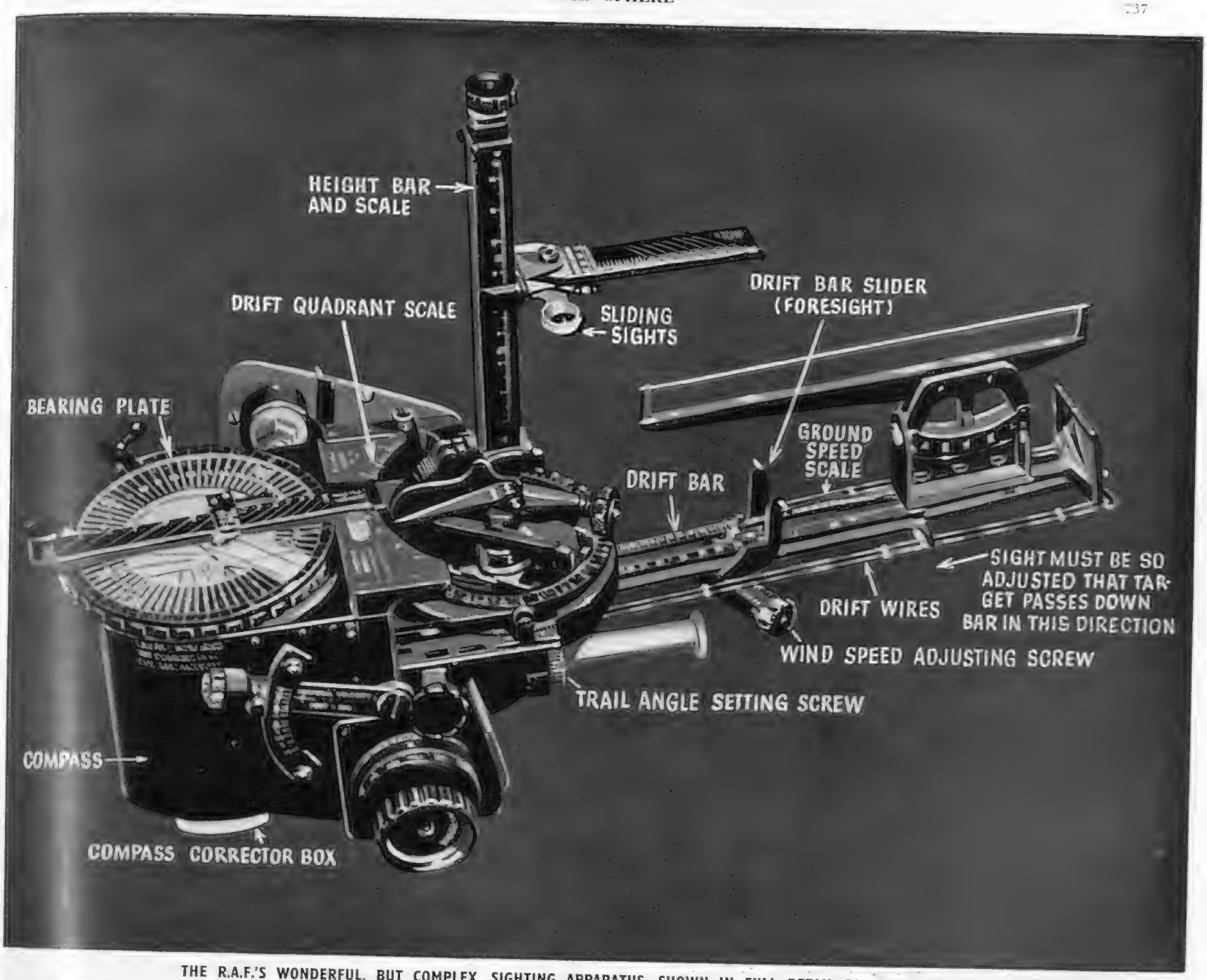
Dive bombing is effective only in good conditions and cannot be done usefully by night. It is a lazy form of bombing which permits the use of less fully trained crews. It was used greatly by the Germans during their first attacks on shipping in the Channel and on the Channel towns; but it has now almost ceased owing to the heavy casualties inflicted on the Stuka dive bombers by the R.A.F.

There is no doubt at all that the British automatic bomb-sight is superior to any other bomb-sight in use anywhere else in the world—not excluding the much vaunted American Sperry gyroscopic sight, about which so much discussion has raged—one group saying that this instrument has been released for British use, the other denying that this is the case! With British sights, British crews and British bombs the work of our bombers is certainly more accurate and more deadly than that of any other Air Force.

One has only to read the communiqués issued by the Air Ministry to appreciate how accurate the work of British bombers is! In many cases, the names of specific buildings in German towns are given as having been hit, and it is rare that a bomb-aimer has to admit that his bombs went wide of the mark.

In most British aircraft the navigation of the plane is also undertaken by the bomb-aimer: here, too, his training is such that only mathematical precision—to a very high degree of proficiency—is tolerated. To-day there is little room for "hit-or-miss" methods; after a flight of 600 miles out, and another 600 miles home, it is essential that the results should be exact—and devastating!

HOW THE BOMB-AIMER TAKES UP HIS PRONE POSITION IN THE NOSE OF THE AIRCRAFT: Right forward of the pilot, and lying prone on the floor, the bomb-aimer has in front of him and below, a clear and uninterrupted view of his target. Here he operates the electrical distributor which releases the bombs—known throughout the service as the "Mickey Mouse." Pulling the "Mickey Mouse" is the last and simplest action in a series of intricate moves by the bomb-aimer. Nowadays he must be a mathematician and a lightning calculator in allowing for height, speed, wind direction and pressure, and the "trail-angle" of the bomb. At the moment of bombing it is the bomb-aimer who gives the pilot direction. "Left—left," he says; "right a little . . . right a little more . . . straight ahead." His eyes are on the bomb-sight and his hand on the "Mickey Mouse." "Now" . . . and round goes the handle. It is all over in less than half a minute—considerably less if the pilot considers that the anti-aircraft fire is coming too near.



THE R.A.F.'S WONDERFUL, BUT COMPLEX, SIGHTING APPARATUS, SHOWN IN FULL DETAIL FOR THE FIRST TIME

This bomb sighting apparatus is, in many ways, superior to the bomb-sighting equipment of the German planes captured by us. The enemy is probably now familiar with the details of our equipment as we are with his! The Americans claim to have an even better apparatus but the details of this are being kept a very closely-guarded secret, although it is doubtful whether the American bomb-sight is, in fact, much better than our own. The various components of this complicated instrument are shown here: and a fuller description of them and their various functions is given in the accompanying article. Nearest to the bomb-aimer is the Compass Bearing Dial; next comes the Drift Quadrant Scale, in front of which rises the Height Bar and Scale with sliding sights. In front, projecting from the main body of the instrument, is a sighting bar down which the target must appear through the sliding sights. The actual visual sighting has to be further corrected by the data given by the drift wires and the wind speed

Above—**TRAINING THE R.A.F. BOMB-AIMERS:** Pupils being taught the first stages of their complicated art. It will readily be understood why R.A.F. Selection Boards insist on a high standard of mathematical proficiency from candidates for this highly technical job

On right—**BOMB-AIMER AND INSTRUMENTS:** Here is the man on whom so much depends, seated in his confined quarters and operating his collection of gadgets. Incidentally, this picture gives another aspect, from a different angle, of the instrument shown in the bigger picture above. The bomb-aimer, in most British aircraft, also acts as navigator. His training is a long and arduous business; but our training methods have made British bomb-aimers about the most scientific and accurate in the world!

Commended to the Attention of the R.A.F.

The Huge Canal which Alone Makes Amsterdam a Seaport

Amsterdam is now occupied by the Germans; presumably it is being forced to help in the effort to maintain Germany. Presumably, also, certain supplies are reaching Amsterdam in steamships hugging the flat coastline which protects the Dutch and Danish coasts. But the "first seaport and commercial capital of Holland" has reached that eminence only through the existence of the wonderful Nordzee Canal here illustrated—which runs from Ymuiden in the sand dunes to the docks and harbours in Amsterdam itself, 15 miles away. At Ymuiden itself are the lock gates that protect the Canal at high water. The older of these has three openings, the largest of which is 130 yards long; the other, completed in 1895, is still larger and has a single opening 245 yards long.

In order to protect the North Sea Canal from the Zuiderzee a huge dam 1¼ miles in length has been constructed across the east mouth of the Y River at Schellingwoude; the north part of this embankment is broken by five openings for the passage of vessels and for regulating the amount of water in the Canal.

This Canal has been the pride of Holland. Without it Amsterdam would become once again a small provincial city with no access, other than by rail,

(Continued below)

THE NORTH SEA CANAL, from Amsterdam to Ymuiden, "by the construction of which Amsterdam recovered its rank as a seaport of the first class." It was constructed at a cost of 40,000,000 florins

ONE OF THE LOCK GATES AT YMUIDEN: The starting point of the 15-mile long Canal to Amsterdam. This is one of the vulnerable spots which we commend to the attention of the R.A.F.

TUGS AND SHIPPING AT YMUIDEN, which give an indication of the importance of the Canal. With the latter rendered ineffective by bombing, Amsterdam would lose its value to the Germans

THE ENTRANCE TO THE LOCK GATES AT YMUIDEN AT THE HEAD OF THE CANAL

(Continued from above)

to the sea—its life-blood. Its docks and harbours would soon be useless, and its importance to the Germans nullified if the North Sea Canal were wrecked. The bombing of the lock gates and dam would wreck the Canal.

Amsterdam itself has already been bombed by the R.A.F. We now suggest that the North Sea Canal should become a target for British bombers, and in this way render Amsterdam a liability to the Germans instead of an asset!

A VIEW OF PART OF THE HARBOUR AT AMSTERDAM which depends on the North Sea Canal for its prosperity and importance. The Canal was built in 1865–76, and was greatly improved [illegible] 1895. It is about 30 ft. in depth and its level is nearly 2 ft. below the mean level at Amsterd[illegible]

The TWO Strategic ISLANDS IN THE GRECO-ITALIAN CAMPAIGN

FROM THE PLEASANT HARBOUR OF CORFU: Looking across to the Northern Heights of Epirus where the Italians attempted a flanking movement on Janina

In peace-time, Corfu town and harbour made one of the pleasantest spots for a yachtsman who was also keen on a morning's sport. It was possible to run across the straits and get in some satisfactory duck shooting on the marshes underlying the hills of Southern Albania, close to the Greek frontier. To-day more serious expeditions are afoot and the Italian troops marching through these hills (from the centre to the right-hand in the above view) have not found the Greeks easy game. In fact, it would seem as if the tables had been turned and that the would-be hunters have themselves become targets for the Greek sportsmen firing from the hills

CORFU Guards the North-Western Area

The history of Corfu stretches back, some hold, to the time of Homer and certainly to early Greek history, becoming later an island popular with the wealthy Roman, so beautiful has its setting been at all times. The Venetians held it during their period of ascendancy in the Adriatic and then the Turks came across the narrow straits to master the isle for a short period, to be followed by France in 179[illegible], from whom it was in turn taken by the British in 1809 and held by us until 186[illegible] when Britain presented it to Greece upon the accession of George I, King of the Hellenes, previously Prince of Denmark. The ex-Kaiser fell under the charm of its sea-girt beauty and occupied the Palace of Achilleion for a period.

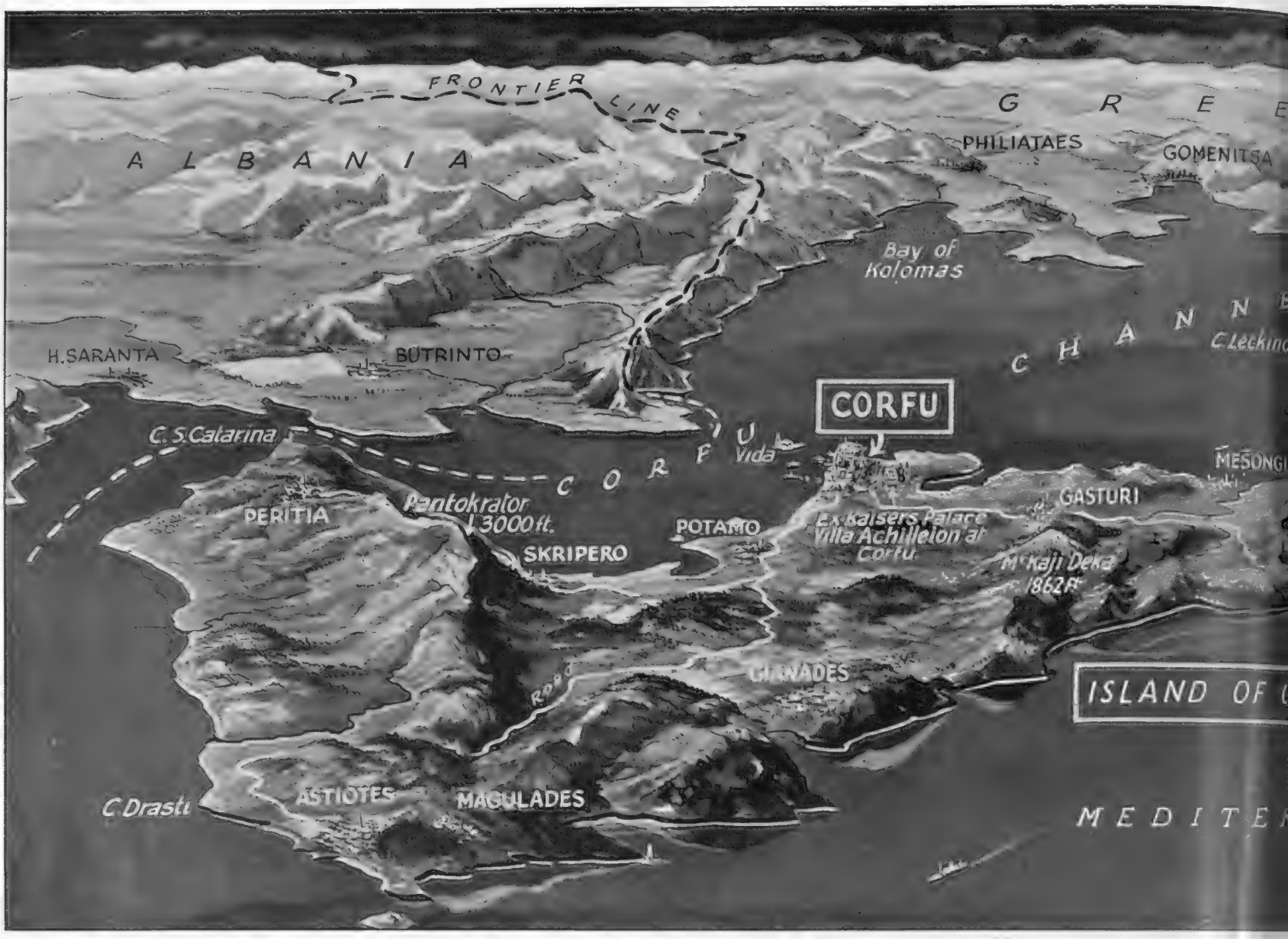
The Italians under Fascist rule have turned covetous eyes upon it, and in the early days of the present conflict dropped bombs upon it, an act of barbarism to which General Metaxas, Prime Minister of Greece, at once replied in a message to the inhabitants. "It is for the second time within the space of a quarter of a century that the noble population of Corfu is the victim of the assassin methods of the Italians. It seems that this beautiful island has always caused offence to our enemies, because perhaps there does not exist in Greece a less fortified spot."

CRETE Holds the Southern Approaches

Crete, the island of Zeus, rises from the sea as a line of snow-capped mountains, completely dominated in the centre by the mass of Mount Ida, which contains the cave of the Chief of all the Gods. With such a lineage, the island could not fail to have a stirring history. In remote times under King Minos it rose to great power, only to fall catastrophically. It produced some great sculptors, coinage of remarkable beauty and other objects giving evidence of considerable culture. In medieval times its fortunes declined and in the seventeenth century it came under Turkish rule. There was strife between the Christian and Moslem islanders for a long period. The struggle culminated in 1897 when Greece came to the aid of her co-religionists on the island. After the war with Turkey, the affairs of the island were regulated by the Powers and we find Britain holding a part of Crete in 1903. The island has always been ready to stand up for its liberties. In the Great War it was the theatre from which M. Venizelos rose to fame when he challenged his royal master and became for a time a popular hero. This struggle was watched by Britain with keen interest, and now once again a British force has landed on Cretan soil to help the Greeks in their great fight.

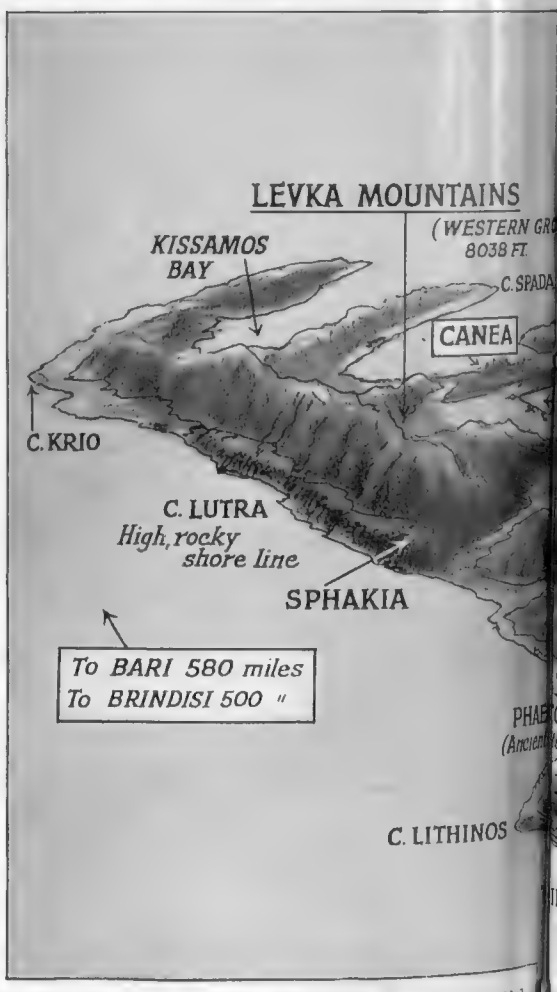
CANEA, THE CHIEF PORT OF CRETE, LIES JUST TO THE WEST OF THE AKROTIRI PENINSULA, WHICH FORMS THE NORTHERN SIDE OF SUDA BAY

Canea, the ancient Sidonia and now the chief trading port of Crete, has a pleasing appearance as viewed from the sea, being backed by high mountains which for certain periods of the year are snow-covered. The skyline of the town is pierced by numerous minarets, but not all of them are now Muhammadan, having in process of time become Christian churches. It is curious to note that the lighthouse in the above picture has taken on the proportions of a minaret. The old military bastion at Canea is of Venetian construction; some of the walls bear the image of the Lion of St. Mark. Canea is one of the ports at which the steamers from Greece called in peace-time



CORFU, THE GREEK ISLAND WHICH FACES THE JUNCTION OF THE ITALIAN–ALBANIAN FRONTIER WITH EPIRUS: The sickle-shaped island (Corcyra, its ancient name, signifies a sickle) came strongly into the news when the island was bombed by Italian planes on November 1 and 2. Since that date air attack on the island slackened. The position of the island is such that it commands the Adriatic and shores of Albania and the Epirus province of Greece. There is a mountainous backbone running through the island, rising to 3,000 ft. in the peak of Pantocrator. The ridge is rocky and bare at its summit. The lower slopes and the valleys are clothed with olive trees, cypress, and ilex. Corfu harbour is only a matter of 3 or 4 miles from the mainland. In peace-time steamers ran regularly to Egypt, Greece, Italy, and England. The most interesting drive in the island is across to the western side, where at Palæo Castrizza one finds the romantically-placed convent placed on a steep rock looking down on the Mediterranean. Most of the roads are good and run through attractive scenery. Palæo Castrizza is hidden by the bluff just in front of Gianades in this view

THE ROCK-BOUND COAST OF CRETE, FAMED IN REMOTE GREEK HISTORY, IN NEW TESTAMENT TIMES, AND IN THE HISTORY OF MODERN GREECE: The above view of the coast near Lutro gives a good impression of the extremely rugged aspect of the southern shores of Crete. All the good harbours are on the opposite side. It was along the Lutro coast that St. Paul sailed in an Alexandrian corn ship towards Rome where he was to undergo imprisonment. The Messara mountains also rise steeply from the sea, and the snow-capped Lasithi dominate the eastern end of the island

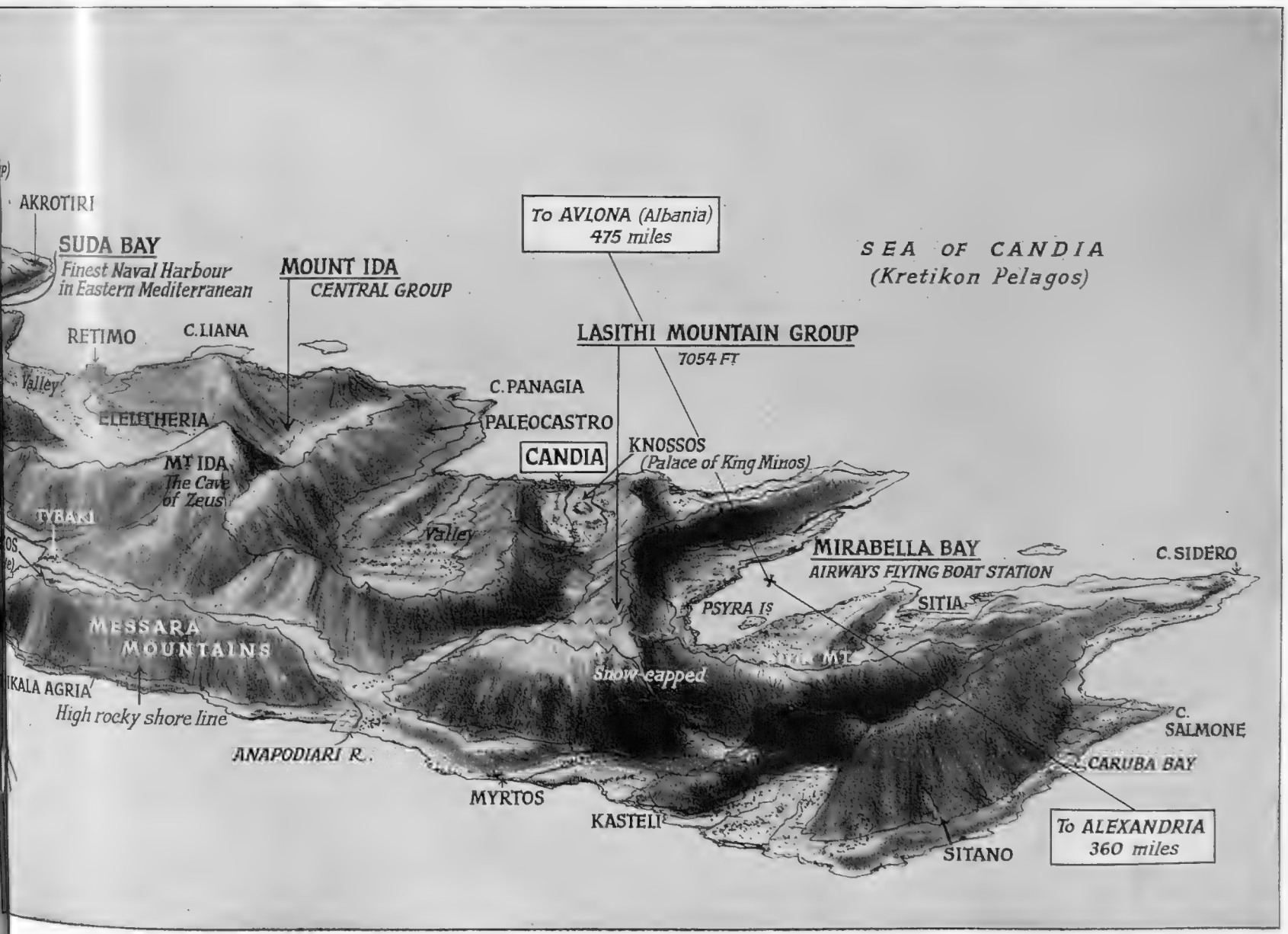


CRETE, THE HISTORIC ISLE ON WHICH BRITISH FORCES HAVE LANDED: The island occupies a strategic position in the present struggle which can hardly be over-estimated. The air bases place the bombing aircraft of the R.A.F. within striking distance of Italian bases both in Albania and in southern Italy. The island is about four times the length of Corfu. It is some twenty-odd miles wide at its widest point. The whole island is mountainous, and can in this connection be divided into three sections, the Levka mountains in the west, the Mount Ida group in the centre, and the Lasithi group in the east. Notable spots from a naval and air point of view are Suda Bay, a magnificent harbour, and Mirabella Bay in the eastern section, a beautiful sheet of water where the Imperial Airways flying-boats were wont to alight on the way to the East. Candia and the chief towns are all on the northern side; the southern is very rocky, with cliffs coming to the water's edge. The positions of Knossos and Phaestos, two sites of remote antiquity, are shown in the view

TWO STRATEGIC ISLANDS

Which are Keys to the Sea Situation Off the Grecian Shores

THE TOWN OF CORFU, CAPITAL OF THE HISTORIC ISLAND, held by Britain during the first half of the nineteenth century, and handed over to Greece when she gained her freedom. The city was much improved during the British protectorate and still bears many signs of the activities of Lord Guilford and others. The Ionian Academy was founded by Lord Guilford in 1823. Several rocky heights give excellent views of the island; the view from the Fortezza Vecchia is particularly fine



CANNON-GUNS IN AERIAL WARFARE

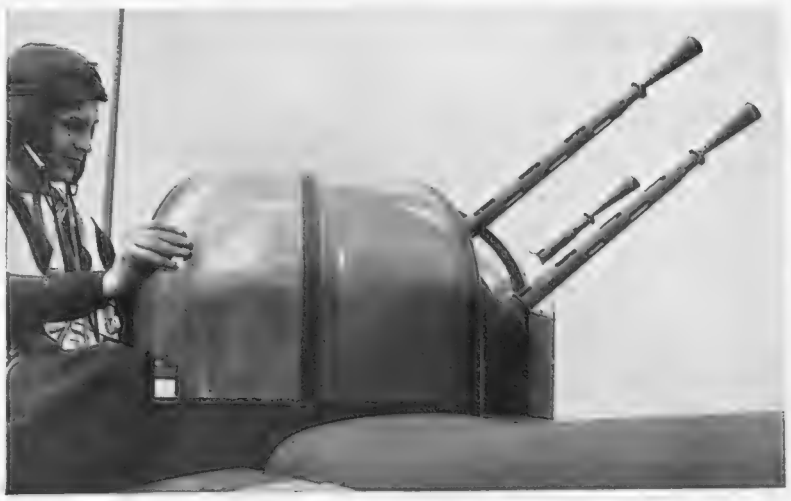
A Discussion of the Method whereby more Powerful Armament is being Secured for Fighter Aircraft for Combat in Mid-Air

BRITISH single-seat fighters have established an undisputed superiority over all types of enemy aeroplanes they have met. Much of this superiority can be accounted for by their heavy fire-power from the eight Browning machine-guns installed in the wings of our Hurricanes and Spitfires. These guns, firing at a combined rate of 9,600 rounds per minute, have enabled our pilots to destroy more than 5,000 German aeroplanes since the war began for only one-third of those losses to the R.A.F.

Now, after nearly fifteen months of war there seems to be evidence that even these formidable batteries will soon have to be replaced by still more powerful armament. The enemy is piling on the weight of armour in all his aeroplanes. At close range, ·303-in. bullets will penetrate even the steel plate the Messerschmitts and Heinkels carry. At a longer distance the armour often saves a crew from destruction.

For more than eighteen months now, shell-firing cannon have been in production in this country for the R.A.F. On March 10, 1939, the then Secretary of State for Air, Sir Kingsley Wood, announced in the House of Commons that production of cannon had started on a big scale. He added that although he was quite satisfied that multi-gun fighters can shoot down any type of bomber, experience had shown that with modern systems of construction a great many machine-gun bullets can hit a bomber or another fighter in a non-vital spot without putting it out of action. The war has amply proved that point.

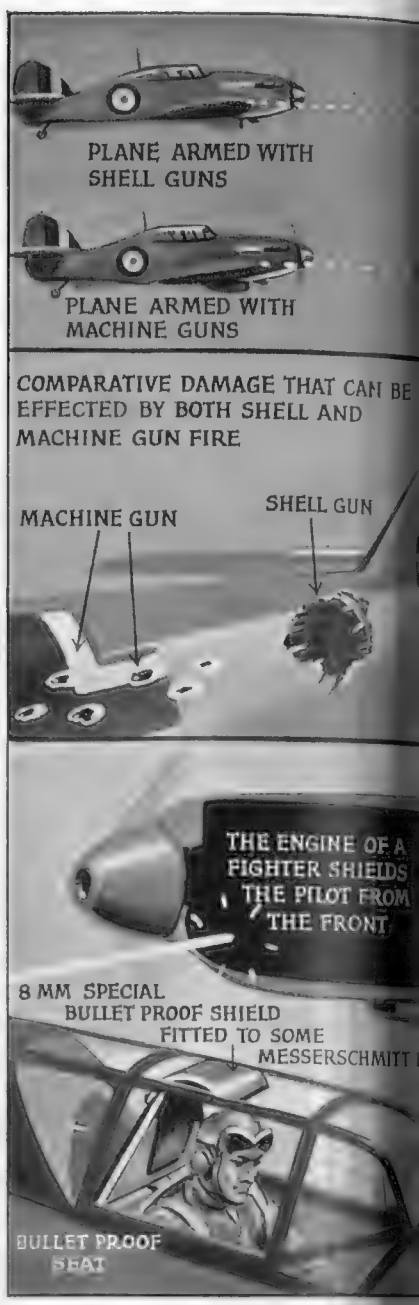
Some months ago, in announcing that cannon had been installed on British fighters experimentally, Captain Harold Balfour, the Under-Secretary of State for Air, said that in one of its first combats a cannon-fitted Spitfire had shot down an enemy bomber in six rounds.



THE MACHINE-GUNS IN THEIR POWER-DRIVEN TURRET OF A BRITISH AIRCRAFT: There are four machine-guns installed in the turret of this Blackburn Roc dive-bomber of the Fleet Air Arm. So far Britain has supported the idea of multiple machine-guns and power-driven turret as against the cannon-guns fitted in certain of the new German aircraft

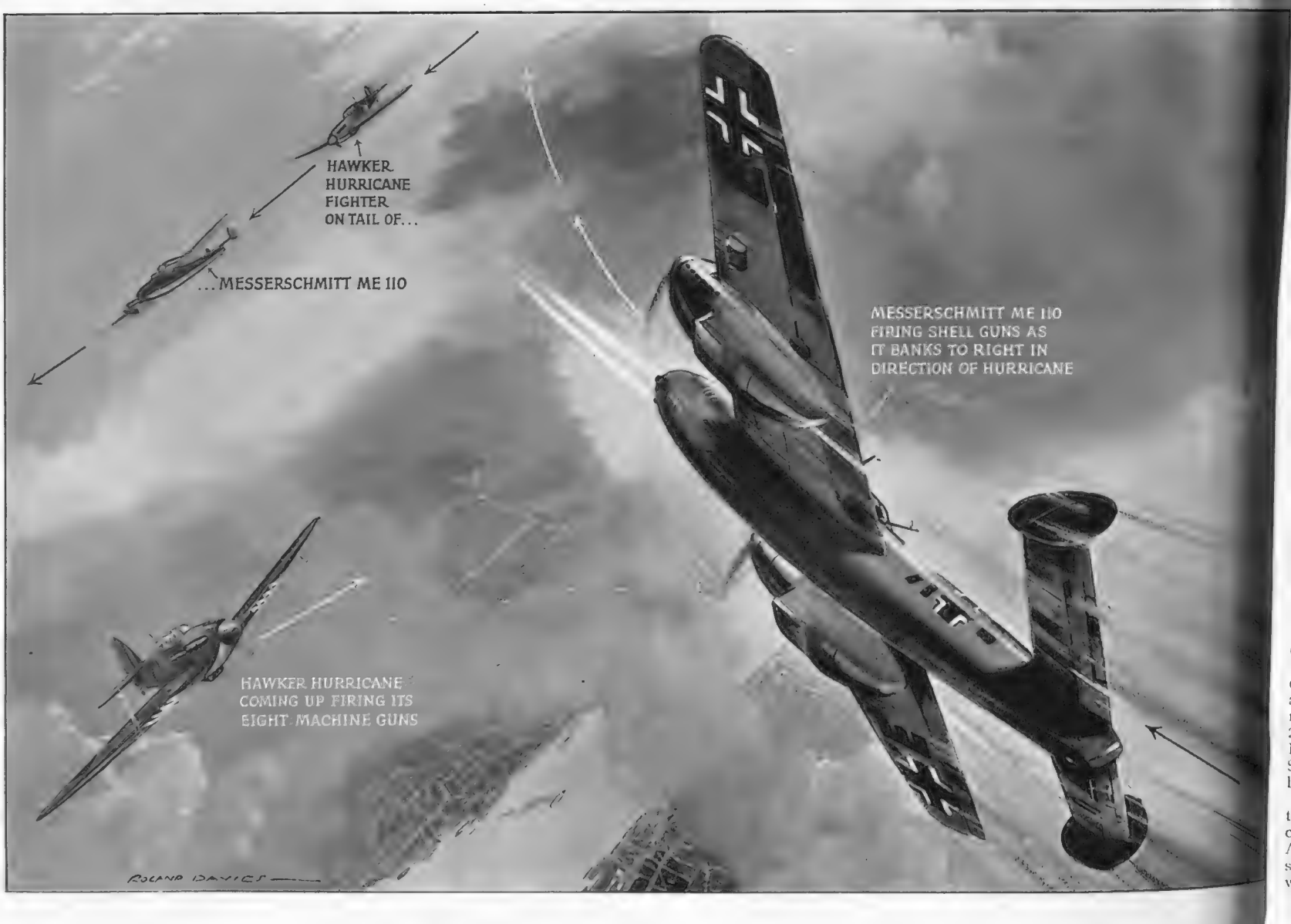
The Types in Use.—Up to a very short time ago, only ·303-in. calibre machine-guns were used in the Royal Air Force. In America the favourite armament for fighters has been two ·5-in. machine-guns mounted on the fuselage. German single-seat fighters have mounted both rifle-bore machine-guns and 20-mm. (·786-in.) cannon. Now aircraft armament is on the eve of big developments.

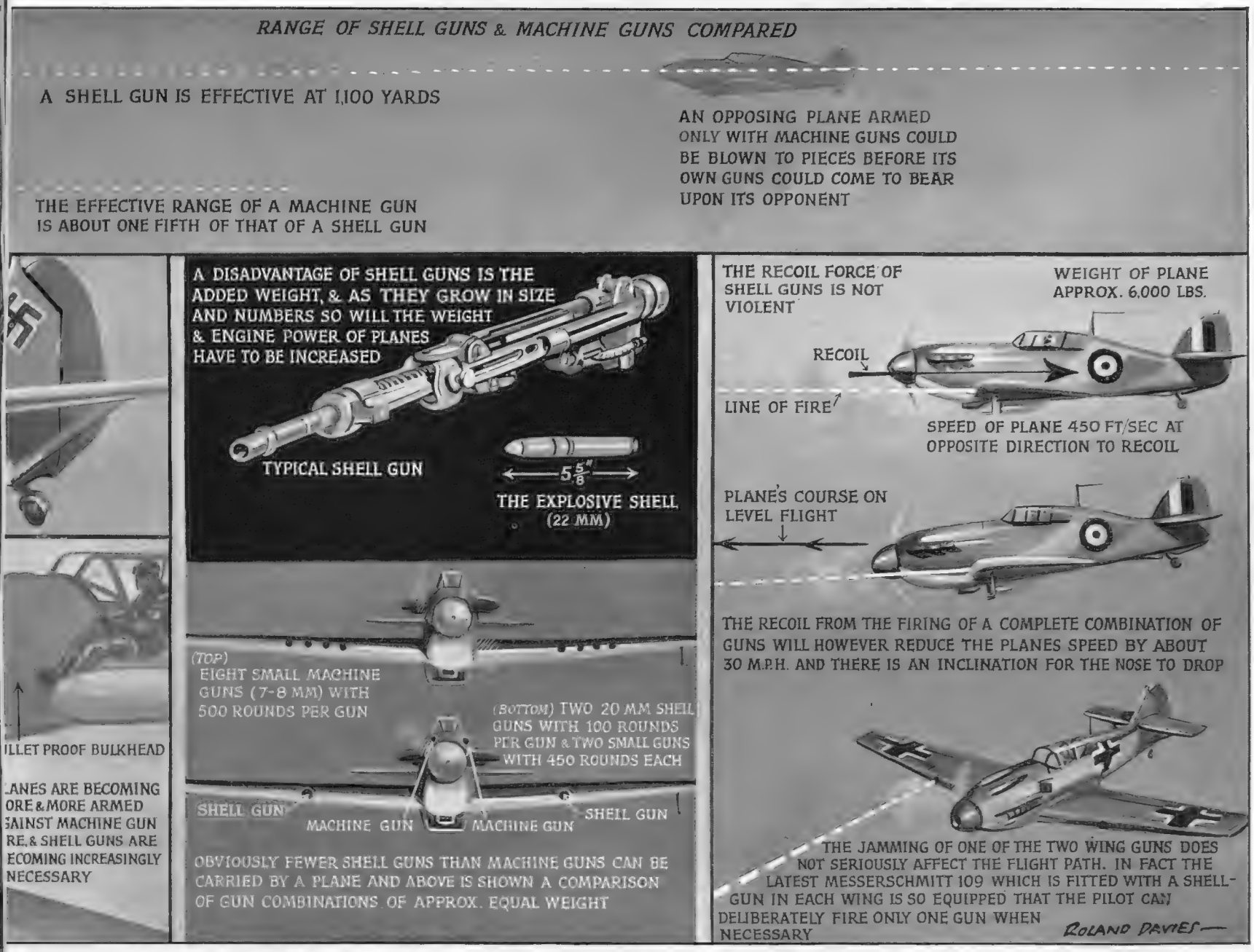
First, let us look at the armament of a Supermarine Spitfire for instance, as it is at present, and see what advantages might be gained by the use of cannon. The standard armament of the Spitfire is eight ·303-in. (7·7-mm.) Browning machine-guns, four in each wing spread out between the ribs. Each gun fires tracer, incendiary, armour-piercing and plain ball ammunition at the rate of 1,200 rounds per minute, each gun is fed from a belt containing several hundred rounds. The weight of each gun is about 20 lb. The



Below—

THE (VERY) VICIOUS CIRCLE—CANNON-GUN (GERMAN) VERSUS MULTIPLE MACHINE-GUN (BRITISH): In the top left-hand corner a Hawker Hurricane is on the tail of a Messerschmitt 110—the former armed with eight machine-guns fired simultaneously, and the latter with two cannon-guns fired from the fuselage. Another Messerschmitt 110 is coming to the aid of its brother; but this in turn is being attacked by another Hurricane coming up from below on the left. The British machine-guns fire 9,600 bullets a minute; the German cannon-guns fire ninety rounds a minute, but have a range of 1,100 yards *—Drawing by Roland Davies*





SHELL-GUN VERSUS MULTIPLE MACHINE-GUN—A SUMMARY OF THE WHOLE POSITION—*Drawing by Roland Davies*

In their search for stronger armament the Germans have gone all out for cannon-guns; their latest Messerschmitt 110's and other aircraft are being fitted with these powerful weapons. Britain hitherto has relied on the multiple machine-gun, as fitted to the immensely successful Spitfire and Hurricane. Now there are indications that future aerial combat will call for the weightier attacks of shells fired from cannon-guns; the enemy is armouring his planes so heavily that a change in method of attack may become necessary very soon. The above series of drawings by Mr. Davies puts forward all the arguments involved in the discussion. Hitherto the eight machine-guns fired simultaneously, employed on most British aircraft, have been successful in attack and defence; but that does not mean that Britain has disregarded the potentialities of the cannon-gun; as far back as March, 1939, production of these on a large scale was started in this country. Owing to the heavier armament of German planes the disruptive effect of a continuous stream of bullets may have to be augmented by the heavier and even more destructive explosive shell

whole installation of eight guns, ammunition containers and chutes, heating apparatus and so forth is around 600 lb., allowing for ammunition for each.

These guns could be replaced for an equal weight by four machine-guns of ·5-in. (12·7-mm.) with 200 rounds each, four 20-mm. (·786-in.) cannon with 50 rounds each, or one 37-mm. (1·457-in.) cannon with 50 rounds. The advantage of the ·5-in. calibre machine-gun is a flatter trajectory and greater hitting power at the expense of rate of fire and increased weight. Although machine-guns of this size are used in the U.S.A. and by Italy they are not likely to be adopted here.

The 20-mm. cannon is so far the most popular alternative to the ·303-in. calibre machine-gun. Its effectiveness is due to its explosive shell which, small as it is, can do great — though not necessarily fatal — damage if it scores a hit. With a small-bore cannon a pilot can open fire at nearly twice the effective range of machine-guns. Yet, because of this increased range, because of the slower rate of fire and because of the fewer guns, he will find much more difficulty in scoring hits. Modern sights help the pilot of a single-seat fighter greatly in this respect but do not provide a perfect answer.

Structurally, 20-mm. cannon have not presented the problem for installation which was at one time feared. The weight of recoil when firing continuously is considerably greater than that of a normal machine-gun, but is not excessive, and can be absorbed without difficulty in the wing of a modern single-seat fighter.

The little shells, which weigh about half a pound each, have sensitive fuses designed to destroy the shells automatically quite soon after they are fired should they not hit their objective. Different makes of these 20-mm. cannon vary greatly in detail. Rheinmetal-Boring in Germany, Madrea in Denmark, Oerlikon in Switzerland, and Hisporo-Suiza in France were the best-known makers before the war.

As might be expected, America has gone one better than everyone else and has produced the biggest aircraft cannon yet. This is the 37-mm. (1·457-in.) American Armaments Corporation gun. The new Bell Airacobra single-seat fighter is armed with one of the cannon as well as four machine-guns of rifle calibre. This big gun has several advantages made possible by its size. The chief of these is the extreme sensitivity of the fuse which will explode the shell even on contact with such a light object as a toy balloon. Furthermore, under no circumstances can the shell explode till it has left the barrel, a safety factor not 100 per cent. reliable in sizes less than 37 mm. Armour-piercing varieties of the 37-mm. shell—which weighs 1·1 lb.—will pierce 1-in. armour plate at any angle greater than 22 deg., the critical angle for deflection. The makers claim that a hit with a 37-mm. shell on almost any part of a machine is certain to bring it down. With a muzzle velocity of 2,750 ft. per sec. it is accurate up to 1,160 yards.

All these features have to be paid for in weight and rate of fire. The 37-mm. cannon can fire eighty-five rounds per minute and has a powerful kick damped by recoil mechanism to 1,500 lb. Even so, this shock load is considerable for an aircraft structure to withstand.

Taken all round, aircraft cannon are certain to have come to stay. Much development remains to be done, particularly on mountings, on heating apparatus for operation at great heights, and on accurate sights. The most likely armament of the single-seat fighter of the future would appear to be about two cannon of 20 mm. or 23 mm. (which has twice the explosive charge) combined with about six machine-guns. Thus the cannon can be used against bombers and in long-range attack, while in the rough and tumble of a dog-fight the machine-gun would be more effective for snip and deflection shooting.

Probably an altogether bigger conception of a multi-seat fighter may be evoked by the development in armament, laid out for half a dozen or more cannon, with one member of the crew detailed solely as a loader to change clips of ammunition. Nor must the use of the cannon be ignored for installation in power-operated gun turrets of our bombers to repel the long-range attacks of cannon-armed fighters. A big bomber provides an ideally steady gun platform, and the sighting is easier for an individual gunner than for a pilot who has to aim his whole machine.

AN ITALIAN MACHINE-GUN AND "GUN TURRET": As installed in the Italian Caproni bomber shot down last week at Woodbridge in Suffolk. The crudity of the whole affair will be apparent to the meanest intelligence! Compare this poor effort with the fine workmanship displayed in the picture of the Blackburn Roc in the upper left

AIR COMMENTARY BY CHARLES G. GREY

(Founder of "The Aeroplane")

DON'T LET US TELL the ENEMY!

Either by Advertisement or Post Office Guide!—And What Is Going to Happen to Those Bases in Eire?—And What Are to Be the "Reprisals" for the Bombing of London?

ONE would imagine, if one were not accustomed to the strange ways of officialdom, that the function of a Public Relations Department was to relate to the public, who, after all, does pay its wages, what is being done by the Service which it represents. And one might even imagine that the function of a Censor's Department was to show common sense—which is the most uncommon sort of sense. But neither seems to work that way.

Also one might imagine that in war-time a Government would wish to relate to the public everything that could hearten and cheer it, and, on the other hand, would try to keep from the enemy all that could hearten and cheer him. Which latter is, or used to be, the Censor's job. And one of the most important parts of that job is to stop the enemy from knowing how much damage he has done, or where he can do fresh damage.

A line along which the Censor might work is stopping publication of the addresses of small firms in the country which advertise that they want armament work, for, sooner or later, our newspapers reach Germany through neutral countries whose trade we are trying to get. Of course, the Germans know exactly where all our big armament works are—especially our aircraft factories, no matter how skilfully camouflaged or shadow-shaded they may be. And the *Luftwaffe* makes regular, and mostly ineffectual, attempts to bomb them.

In passing, I should like to compliment the Home Guard ground defences, as well as the Regular Army, on the good shooting they have done at certain places. Few things can be more humiliating to an enemy air-crew than to see that they have missed such a sitting target as a big factory and then to have to land a few miles farther on because some amateur gunner in an improvised armoured car has plugged their machine in a vital spot as they were flying over the target. If the Censor will let me publish such heartening news, I may say that I know of at least one case, in my own limited range, where that has happened.

In which matter, I hear that good game-shots, who know nothing of scientific gunnery, have done excellent work with the light anti-aircraft armament. They shoot by eye and not by the book.

But let us get back to that matter of addresses. When the German Industrial Intelligence sees an advertisement reading, say: "Stampings for Aircraft. Consolidated Forgings, Ltd., Birmingham," that does not interest them. Either they knew the firm (the name is imaginary, but there are lots such) before the war and have already pin-pointed it as a target, or they hope that the *Luftwaffe* will get it in the general bombing of the Birmingham area.

On the other hand, when they see "Aircraft Repetition Work Wanted—Popbottle's Engineering Works Ltd., The Appian Way, Sandtown-by-Sea" they pin-point that obscure health resort (again imaginary) and bomb it and its bath-chairs to blazes, unless a fighter squadron of the R.A.F. appears out of the blue by sheer joss.

Worse still is the advertisement which, asking for sub-contract work, gives the number and road of the works of some hitherto unknown firm in an unbombed outlying suburb of a much-bombed big city, or in a comparatively innocent country town, probably in what we now call a "reception area." That is merely advertising a fresh target for the *Luftwaffe*.

Talking of the German Intelligence Department. About forty years ago a cousin of mine in the Navy met a cheery German naval officer at a party, and the two chipped one another about their war aims. My cousin asked the German whether they had their invasion plans ready. "Yes," said the German. "We have your country all mapped, on a scale of many inches to the mile, and we have a list of all your post offices, actually with the names of the postmasters, so that we shall know that we have got the right man as a hostage if any tricks are played with the telegraph apparatus."

Innocent-like, being an N.O., my cousin, genuinely surprised, said, "Good Lord, that must have cost a lot of time and trouble. How did you do it?" Said the German, "Simply by paying sixpence for your so-excellent Post Office Guide, and by buying a set of your magnificent Ordnance maps." Naturally no British naval officer of those days would have known that such things existed. Admiralty charts which gave under-water contours for all the world seemed quite natural to him, but contours of the country above high-water mark were outside his mental radius of action.

And, talking of naval affairs. Some three or four months ago, writing in another place, I tried to say something about Berehaven and Lough Swilly, our former naval and air bases on the Atlantic coast of Ireland, but the Censor did not approve. Now the whole subject has been blown wide open in the House of Commons. So let us see what the Censor has to say now.

Presumably as the inheritor of the sins of my fathers I was brought up in the south of Ireland. And, though I have no Irish relations, I claim that, as a looker-on, I know the Irish much better than they know themselves.

In my youth, Castletown Berehaven, on Bantry Bay, was a well-to-do little place which grew fat on the freehanded sailors and marines of the Royal Navy. And there was never any trouble between the King's men and the natives. The Irishry did not even shoot them from behind ditches as they did their own landlords. And that in spite of the fact that the O'Sullivan-Beres, whose descendants still inhabit those parts in spite of Queen Elizabeth's best efforts to exterminate them, were the finest fighting sept in the south of Ireland. Or perhaps that was why.

Queenstown, on Cork Harbour, now called Cobh by the Irish, and pronounced Cove, which means cove, as in English, was a rich town, not because the Atlantic mail boats called there, which they do not now, but because of the naval personnel of Haulbowline and Spike Islands, which were big naval establishments.

North Donegal made a nice harvest when the Fleet was in Lough Swilly and the men came ashore ("Lough" is pronounced "Loch," as in Scotland). When our Government, defeated by a campaign of assassination, not in a fair fight, withdrew our Service personnel, the local inhabitants mourned them as their best friends, as well as their sole means of support—and went broke.

All the little garrison towns, and regimental depots in Ireland, such as Buttevant, Fermoy, Templemore, Mullingar, Longford, and the rest were in the same state. And they would all be glad to see us back again.

We are kept out by a little group of fanatics who do not represent the

A NEW STUDY OF AIR MARSHAL SIR PHILIP JOUBERT, K.C.B., C.M.G., D.S.O., who has been making B.B.C. history with his weekly talk to the peoples of this country and the United States about the progress of the air war. Apart from his wide scholarship and literary skill, exceptional in a fighting man, there are few more fitted than he is in knowledge and all-round experience to deal with the subject he has made his own. Taking his ticket (Aero Club Certificate No. 280) on September 3, 1912, whilst he was serving as a gunner-officer, he has put in over twenty-eight years' service flying. As a Captain in the old Royal Flying Corps he made the first aerial reconnaissance over the enemy in the 1914–1918 war. During these years he served first as a fighting pilot and then as leader and air tactician. In the post-war years his promotion was rapid: for a time he was A.O.C. Fighter Command, and then he went to the Coastal Command when this branch was created from nothing. Much of the success of this branch of the R.A.F. is due to him

NO. 601 SQUADRON (CITY OF LONDON), OF THE AUXILIARY AIR FORCE, MOST FAMOUS OF THE "SPARE-TIME" SQUADRONS, ENJOYS A WELL-EARNED REST AFTER CONTINUOUS ACTION

Composed of millionaires, men-about-town, company directors, accountants, clerks, clubmen, No. 601 is the most famous of the Auxiliary Squadrons: it has been enjoying a comparative rest in the South-West after having been in action continuously since August 7. From that date up to October 31, pilots of the squadron have shot down 200 German aircraft of all types over Great Britain. In one day alone—August 13—no fewer than forty-three enemy aircraft were destroyed at a cost to the squadron of one pilot killed and three Hurricanes damaged. Ten of the pilots have been awarded the D.F.C., and the casualties include Pilot-Officer William Fiske (first United States pilot to be killed) and Flight-Lieut. William Rhodes-Moorhouse (son of the first British airman to win the V.C. in the last war). The squadron played a big part in the Dunkirk battles

mass (a couple of millions at most) of the Irish people any more than the Goebbels–Himmler–Ribbentrop clique represent the German people. Are we going to let those few fanatics stop us from giving adequate sea and air protection to our Atlantic traffic?

Taking over our old bases in Ireland need not bring the Eirish into the war, if they want to stay out, any more than landing our troops in Iceland has brought the Icelanders in, or than the occupation of Denmark by Germany has brought the Danes in against us. And so far as Mr. de Valera's threatened bloodshed is concerned that would only happen if his Army attacked our shore-parties by sitting on the hills above and sniping.

The Irish have already been bombed in the County Wexford, where I spent my childhood, and at Rathdrum, a few miles inland from Arklow and Wicklow, those two minute fishing ports which still retain their Scandinavian names in spite of the defeat of the Danes at the Battle of Clontarf by the legendary Brian Boruimhe (pronounced Booroo, not Ballyhoo), and their subsequent expulsion.

Those bombs were probably jettisoned to lighten ship when the aeroplanes were being chased by R.A.F. fighter patrols up St. George's Channel. Please note that it is not the Irish Sea till you get to North Ireland. I hope that Mr. de Valera got the apology for which he asked from the German Ambassador, Minister, or what-not in Dublin.

If the Navy and the R.A.F. took over Berehaven and Lough Swilly, and the *Luftwaffe* went there to bomb them, there would be little to bomb barring bare rocks. And perhaps the neutral Irish anti-aircraft artillery might like to join our people in a bit of that kind of snap-shooting at which Irish game-shots are really good.

Berehaven would not matter so much if the French had not presented Brest to the Germans. With all due respect to Mr. Duff Cooper's injunction that we "must not say that the French let us down," I agree with Mr. Churchill's saying in the House of Commons in his big speech on November 5, "Such a frightful desertion by our Allies might well have confronted us with insoluble problems." And though this problem is not insoluble, it is difficult to solve unless we make up our minds to be firm and ruthless.

The Germans cannot "jump our claim" in Ireland as they did in Norway, for purely geographical reasons, so there is no question of getting there first. The real need is to get there at once. This is essential if we are to counter the very serious threat to our shipping off the South and West of Ireland.

HOW THE BOMBS ARE STOWED IN THEIR RACKS ON A BRITISH BOMBER

This picture from the Western Desert is interesting as showing, in close detail, the great number of bombs which British aircraft can carry. According to the needs of the moment the pilot can release one bomb or the whole lot. After the bombs have been loaded, the side panels and spring loaded doors are replaced, so that the streamlining of the aircraft in flight is unaffected

As things are, Brest is on almost the same longitude as is Penzance, but about 120 miles farther south, and that much more from the Atlantic shipping lanes. Berehaven is 250 miles farther out into the Atlantic, and 500 miles added to the out-and-home journey is something to be considered even in these days of long-range seaplanes. If nothing else, it means that our flying-boats could add two hours or more to their patrolling time if they were working from Berehaven, and that the Germans from Brest would have to travel 700 miles extra to help in such work as sank the *Empress of Britain*.

By the way, it is no business of mine, but will some Public Relations Officer please relate why the Navy *must* commandeer a £3,000,000 unarmoured luxury liner to act as an auxiliary cruiser instead of using it for high-speed special transport of valuable persons or products with a fast cruiser escort?

In the last war the Navy commandeered the *Aquitania*, cut many tens of thousands of pounds worth of luxury fittings out of her with pick-axes and crow-bars, threw them on the dock at Liverpool, fitted her hurriedly as a hospital ship, took her out into St. George's Channel, or the Irish Sea, with a strange crew, and *rammed Ireland* with her. Unfortunately she did not sink it, and severely damaged herself.

Mr. Lees-Smith (Corporal Lees-Smith, M.P., of the last war) did well to raise the question of these Irish bases when he said, "If we could have the use of Berehaven and Lough Swilly, the whole position would be transformed in a night. The world ought to realise what we pay for our principles, with hundreds of thousands of tonnage sunk every month and hundreds of British sailors getting drowned." I wonder whether after twenty years, since he saw cold facts in the last war, Mr. Lees-Smith has acquired the gift of irony and was trying to make the House see how fatuous political principles can be when they conflict with the common principles of humanity and of national safety.

Sir Archibald Southby, good old Conservative, got nearer the mark when he said, "It passes the comprehension of the ordinary man in the street why we cannot have them" (that is Berehaven and Lough Swilly).

But I do not agree with Sir Archibald that if the Vichy Water Government hands over the remains of the French Fleet to the Germans we should bomb Paris. I do not like the Parisians; their selfishness and their public manners are abominable. But *they* did not lose their war. *They* did not elect Blum or Cot. And in normal times Paris is the world's playground. We may want it ourselves.

Likewise I object to the bombing of Rome. It is the world's, not Mussolini's. And the most interesting part of it is so ruinous already that we do not want to make it worse. Fancy putting a bomb into the Colosseum; who would lose most, us or the Italians? But I should not mind if somebody bombed that white marble atrocity, the monument to Vittorio Emmanuele III. When one is flying over Rome it sticks out like a sore thumb in a white bandage.

Bombing Berlin does not matter, because it was being rebuilt anyhow, and it was never a beautiful city, in spite of the Unter den Linden and the Thier Garten.

ALL DECORATED FOR GALLANTRY IN ACTION AND ALL WOUNDED: Many of our pilots who have received decorations for valour in action are in hospital following injuries received in battle. All express the same opinion—that our men are 300 per cent. better and more efficient than the Germans; and all of them are anxious to get back to their job. This picture was taken at an Officers' Hospital in the South-West a few days ago

Bombing London, but for the loss of life, would be a benefit to the British Empire. If only we could assure the safety of Westminster Abbey and the Houses of Parliament, even the best of the rest would be no loss, and smashing all those miles of slums and shabby-genteel villas, and out-of-date nineteenth-century big houses now used as tenements would be thoroughly praiseworthy.

But the loss of life is appalling. Mr. Churchill said that 14,000 civilians had been killed and 20,000 wounded, four-fifths of them in London—that is to say, more than 27,000 civilian casualties in London alone—about 2¼ Divisions of troops. Pretty heavy, is it not?

All the more need to defeat the night raiders. Mr. Churchill again, on "firework night," assured us that, "There is no doubt that the full malice and power of the enemy and his bombing force have been employed against us. They tried their best to obey Herr Hitler's orders. But the scale of their attacks has dwindled."

Some of us in some parts of London that night and the next two nights may not have agreed with the optimism of Mr. Churchill's last statement. But none would doubt an official statement of his, so the faster the dwindling process proceeds, the better we shall be pleased.

And I still believe firmly that the best remedy of all is to stop the enemy from starting. Bomb the German bombers before they are made, and then they cannot bomb us.

Moreover, do not make the mistake of under-rating our enemies. Sir Archibald Sinclair, Secretary of State for Air, speaking at Sheffield, on November 6, of the repulse of German air attacks, said: "The huge German Air Force greatly outnumbered our own, and do not under-estimate its quality. Their pilots are brave, well-trained, of splendid physique and high morale. It adds to our pride in the Royal Air Force when we realise that it is over such foes and against great numerical odds that our pilots have established their individual ascendancy.

"The German aircraft, too, are good—are very good—but ours are even better. To the Air Staff which took the big and keenly contested decision to adopt the eight-gun fighter, now for a year the master of the skies; which planned the training system now proved in action to be the best in the world; which has thought out the strategy, tactics, and ancillary organisation of air warfare, not merely as an adjunct of land and sea warfare but as a separate means of warfare with characteristics of its own, the country will one day realise its debt."

That is the way to talk. Those fatuous fools who talk and write of the inferiority of German aeroplanes and the cowardice of German pilots are merely telling the public to ask the Air Ministry why, if the Germans are so bad, the R.A.F. lets so many German bombers come over here by day and night? The fact is that the Germans are very good, and the R.A.F. are splendid to deal with them as they do.

WOMEN AUXILIARY WORKERS OF THE WAR

What the Various Shoulder Badges Signify and the Work Which Each of the Nine Corps or Services Here Illustrated Undertakes

Specially Described for "The Sphere"

W.A.A.F.

Women's Auxiliary Air Force

Some W.A.A.F.s are skilled in Balloon Barrage work and telephony

The duties of the Women's Auxiliary Air Force are numerous, for as well as the usual canteen and secretarial duties allotted to women in all the Services, there are various jobs attached to the Air Force itself. The servicing of the balloon barrage gives endless work, there are all the necessary repairs to be carried out with the greatest possible speed and efficiency; parachutes, too, have to be examined with minute care and kept in faultless condition. A certain percentage of this force are skilled telephonists and car drivers.

W.R.N.S.

Women's Royal Naval Service

Some Wrens are attached to the Port of London Authority; others are map plotters

Members of the Women's Royal Naval Service are concerned entirely with shore establishments. The majority of them must be familiar with wireless telegraphy and be expert secretarial assistants. Numbers of W.R.N.s are engaged in relieving staff at the Port of London Authority and deal entirely with stores. Others work at tracing and map plotting, and those with a more technical skill are engaged in the hydrographic departments of the Admiralty. This body of workers soon became known as the "Wrens."

A.T.S.

Auxiliary Territorial Service

The work of the members includes the running of canteens. Some members are detailed to secretarial and car driving duties

The Auxiliary Territorial Service is run very much on ordinary Army lines; the women are paid from 12s. per week and all their uniform outfit and equipment is found. The duties of the members are concerned with the Army alone and consist of cooking, canteen, secretarial and telephone work. There is in addition to the above a branch of skilled drivers who must possess an expert knowledge of mechanics; they are further expected to keep the cars they drive in perfect condition and running order and act as chauffeuses to the various officers in their departments. A member attached to this particular duty is seen above.

N.A.A.F.I.

Navy, Army and Air Force Institute

Skilled cooks and waitresses are supplied by the Naffy's for the three forces in various parts of the country

One of the services which comes into direct contact with the fighting forces is the Navy, Army and Air Force Institute. The jobs carried out by the members of this energetic body are all concerned with catering for the three forces. A large number of skilled cooks, waitresses and other canteen workers are supplied by the Institute and billeted in the district where they are in charge of the cooking arrangements. The uniforms of the cooks and waitresses are shown in the illustration given here. The nickname of "Naffy" was very quickly found in the arrangement of letters forming in brief the name of the Institute.

M.T.C.

Mechanised Transport Corps

Members have to be expert mechanics. Some are selected for foreign service; others are attached to stretcher parties

There are three distinct branches of the Women's Mechanised Transport Corps—the overseas, civil defence, and owner driver branches. The overseas branch trains women in advanced mechanics and desert driving. Those selected for foreign service must be in a first-class state of health, for the conditions under which they may be called upon to live may be primitive. Those engaged in civil defence are attached to stretcher parties or as drivers for the American ambulance. In every branch of the M.T.C. the uniform and equipment must be supplied by the volunteers themselves (outlay about £30). The Department of Owner Drivers may be called upon to act as chauffeuses in any district.

V.A.D.

Voluntary Aid Detachment

The V.A.D. members work almost exclusively as nurses, some hospital experience being necessary

Nursing auxiliaries from the Red Cross and St. John's Ambulance work together in the United Women's Voluntary Aid Detachments popularly known as the V.A.D.s. They must have spent at least forty hours nursing actually in hospital, and in addition, before they are admitted to this service they must also hold a first aid certificate. The V.A.D.s come under the Civil Nursing Reserve in cases of emergency, their duties being those of an ordinary nurse. In the last war, the V.A.D.s of the two branches numbered no less than 87,000 and were employed in hundreds of V.A.D. hospitals.

F.A.N.Y.

First Aid Nursing Yeomanry

The "Fannys" are chiefly a service of drivers linking hospitals together in motor ambulance work

The First Aid Nursing Yeomanry is now almost entirely a service of drivers, and their duties being very much the same as those of the M.T.C., they are frequently allocated to the same class of employment. Thus many of them are engaged in driving the American ambulances which are concerned chiefly in inter-hospital work. The Nursing Yeomanry also supplies drivers for the mobile surgical teams. The members are not all necessarily trained in first aid as the name of the Nursing Yeomanry would seem to imply, though many of them are very skilled nurse

A.F.S.

Auxiliary Fire Service

The members are mainly employed in telephone and secretarial work, with some drivers for fire outbreaks

The Auxiliary Fire Service employs a large number of women, not as taking the place of firemen, but to work in close connection with the fire service system, chiefly in the capacity of telephonists, an employment which often requires great pluck and endurance. Those engaged in secretarial and telephonic duties are equipped with a uniform, coat and skirt, others engaged as drivers wear a similar coat with slacks. Drivers have frequently to take officials to the scene of the fire where the men of the A.F.S. are at work. This work naturally entails bringing the drivers in close proximity to the outbreaks of fire.

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THE TORPEDO ATTACK

How it was Carried Out at Taranto by the Torpedo-Droppers of the Fleet Air Arm

HOW THE AERIAL TORPEDO IS CARRIED DURING A FLIGHT: On this type of aircraft the undercarriage is fixed; despite that it flies over the sea, wheels are fitted for landings on the deck of the aircraft-carrier from which it is flown and on which it alights on return. The 18-in. torpedo is carried between the landing wheels and under the fuselage as shown here

SKIMMING LOW OVER THE WATER, THE DEADLY TORPEDO IS LAUNCHED BY AIMING THE WHOLE AIRCRAFT AT THE TARGET

Never before in this war, or any other, has a new Arm so justified its existence—and the hopes of its creators—in such fashion as the Fleet Air Arm has justified itself at Taranto. Even in the last war, aircraft-carriers operated with the Royal Navy; but it was in the intervening years that this huge type of vessel was fully developed. To-day, the British Navy is stronger in this type than any other Navy. Many times have these carriers been "sunk" by the Germans; nevertheless, these same vessels have carried out one of the decisive naval engagements of this war. By their crippling of a number of Italy's capital ships, at one stroke the whole balance of naval power in the Mediterranean has been changed.

Torpedo-dropping from aircraft has been practised for a long time in the British Navy: from its successes in Norway, mostly tentative, methods have been developed which have culminated in the present smashing blow. The organisation behind the Taranto attack must have been colossal—all branches must have collaborated in the most wonderful fashion to secure this decisive British victory.

A SWORDFISH OF THE FLEET AIR ARM, WITH ITS TORPEDO: This is the type of biplane which probably played a large part in the attack; it was specially developed by the Fairey Company for the work of torpedo dropping. Numbers of them have been in use with the Fleet Air Arm since the outbreak of war

A SKUA DIVE-BOMBER OF THE FLEET AIR ARM: Specially designed for naval use, it is possible that these aircraft first launched a bomb attack on the Italian vessels, and then—freed of their load—they returned to the scene of action to fulfil another of their functions, as escorts for the torpedo-droppers

A BLACKBURN ROC TWO-PURPOSE PLANE, USED AS BOTH FIGHTER AND BOMBER: Based on the Skua, the Roc is also in production for the Royal Navy. As one of our most recent aircraft, very little data on the performance of this type is available for publication. The Roc carries a crew of two and has a power-operated turret behind

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The World of Books—By Vernon Fane

AN OUTSTANDING WAR-TIME NOVEL

Nevil Shute's Stirring Tale of the R.A.F.; The Love Story of Goethe and Lotte Kestner; Victorian Hilarity and Stuart Intrigue

IT is time the British public sat up and took notice of Mr. Nevil Shute.

Not long after Munich, and just about the time when this country was becoming A.R.P.-conscious, a novel was published called *What Happened to the Corbetts*. The Corbetts, it will be remembered, were an ordinary middle-class family who lived in a suburb of Southampton. They were bombed and driven from their home. The book was received in a spirit of "it can't happen here." There was a good deal of wishful thinking in those days.

Yet such was the quality of that novel that by some critics it was compared favourably with the earlier works of Mr. H. G. Wells, and in form and substance with the best of John Buchan. In America it swept the continent and became a best-seller. No such thing happened here. The prophet is without honour—but that isn't the point.

Mr. Nevil Shute followed that remarkable and prophetic novel with another one, called *An Old Captivity*; a first-rate adventure yarn, and again worthy to be compared with Buchan. In both of these books there was a good deal of flying action, upon which subject, it is easy to deduce, Mr. Shute is an expert.

Quite apart from their topicality, these two books deserved far more attention than they received, and as much, if not more, than they achieved on the other side of the Atlantic. For a novelist with gifts that can be compared with the early Wells is both rare and remarkable in the present state of the contemporary English literary scene.

Therefore I commend, and commend earnestly and seriously, Mr. Nevil Shute's new novel, **LANDFALL** (Heinemann. 8s.), to readers of all tastes. There are qualities in his writing; in his technique and construction; an urgency in his prose, most admirably displayed within the swift-moving action of his story. There is a concise and definite delineation of character within the flow of the action. His people come alive in a sentence and stay vigorously alive throughout.

He is a born story-teller; and there are not too many of his kind about in these days. He has put some virility—some guts—back into the English novel.

"Landfall" is a novel of this war. "Escapist" fiction is, I am aware, the fashionable order of the day. None of our major novelists has as yet, as far as I am aware, taken a plunge at the events of the last eighteen months. They have preferred the easier path of escape into the past; or into the less significant problems of the present.

Mr. Nevil Shute goes boldly into his subject and makes his hero an airman on active service. The theme has exciting possibilities. Dangerous ones, too, for an author who dares competition with the daily news bulletins. For the exploits of these airmen are an epic subject. "Never in our history have so many owed so much to so few."

Pilot Officer Chambers was a member of a unit of the Coastal Command. In every kind of weather he patrolled the Channel, reporting the movements of ships, looking for enemy aircraft (who seldom, or never, showed up during the period in which the story is written) and for enemy submarines.

Mr. Chambers was a good pilot, but he and his crew were apt to get fed up with their routine patrol work when, day after day, week after week, nothing exciting happened. Mr. Chambers also met a girl. A good girl; a nice girl; but hardly the type suitable for an officer of commissioned rank.

Then one day, when the ceiling was very low and visibility nearing the zero mark, Mr. Chambers spotted a submarine. The same, he thought, which had sunk a merchantman the day before and drowned a lot of women and children. Mr. Chambers put a stick across the submerging murder-craft; banked, dived again, gave her the rest of the works and sank her.

It fell to the lot of Captain Burnaby, R.N., to inform the Wing Commander that it was a British submarine which had been sunk.

It was a bad case, but the Pilot Officer was given a chance to rehabilitate himself by making some highly dangerous experiments with a secret bombing device. Through it all Mr. Chambers remained convinced that it really was a U-boat he had demolished; which view was passionately endorsed by Miss Mona Stevens.

From then on the story develops into a thrilling picture of life with R.A.F. units on active service, supported by the highly dangerous activities of the hero and the devoted tenacity of Miss Stevens.

In the end—but the reader will want to discover the end for himself. The author finishes on this note:

"So let them pass, small people of no great significance, caught up and swept together like dead leaves in the great whirlwind of the war. Wars come, and all the world is shattered by their blast. But through it all young people meet and

(Continued on page 254)

CHRISTMAS GIFTS FOR TROOPS IN THE EAST: The War Office recently issued an appeal to the public for Christmas gifts for the soldiers stationed in the East. The response has been most generous. Books figure largely among the gifts of articles sent, and these voluntary workers at the Army Comforts Depot are seen sorting and stacking the volumes before dispatch

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THE WORLD OF BOOKS—*(Continued from page 252)*

marry; life goes on, though temples rock and the tall buildings start and crumble in the dust of their destruction."

Here, then, is a war story; a grand story, and one worthy to be placed beside the best in the heritage of English literature.

Thomas Mann, probably the one authentic genius of his generation in Germany, now lives in voluntary exile, and has done since the advent of the Nazi regime. They burn books in Germany but they cannot destroy the living word.

LOTTE IN WEIMAR (Secker and Warburg. 9s. 6d.) is the mature work of a master. He has taken an established German legend and worked variations upon it on an inverted Pygmalion theme. Through the lens of his own genius he re-focuses the life and character of the greatest German writer of the past. He dispels the mists of sentimental apotheosis and presents a human being, subject, like all men who achieve fame in their own lifetime, to the human vanities. He also creates, from out of a legend, the living character of a woman who lived a full life in spite of it.

Lotte Kestner had been immortalised by Goethe in *The Sorrows of Werther*. As a student he had fallen in love with her, but was also the friend of her betrothed. Kestner had remonstrated, but Lotte's loyalty had remained unshaken. Goethe's charm and brilliance had captivated them both so that when he parted from his adored Lotte, Kestner consented to the gift to Goethe of the pink breast knot of her dress.

They were not to meet again until forty years afterwards. Charlotte had borne eleven children to her beloved husband and was now widowed. Lotte had become the inspiration of a poetic masterpiece; Goethe was Germany's idol and was surrounded by the pomp of the Weimar administration. When the aged Frau Councillor Charlotte Kestner, the sentimentally revered Lotte, arrived in Weimar she caused a sensation.

Ostensibly her visit was not to Goethe but to her sister, but the irresistible motive was there. In the fragrance of her youth she had inspired the great man. It was a sentimental journey. Thomas Mann's novel is a subtle analysis of its failure.

Goethe had not carried the charm of his youth into old age. He could still produce a formal charm; his talk was as brilliant as ever, but he had developed an overbearing egotism, was a tyrant in his own house, and was surrounded by a degrading band of flatterers and sycophants. Charlotte's almost shy and wistful approach was received by the stiff courtesy of a great man over-used to deference. The inspiration of the legend had vanished into the unremembered past. Or so it appeared. "I made," she wrote afterwards to her son, "a new acquaintance with an old man who, if I had now known it was Goethe, and even knowing it, made on me no pleasant impression."

The genius of Thomas Mann has never been better displayed than in this study of a man whose character was unable to survive apotheosis in his lifetime, nor in the subtleties of the implicit love story in which sentiment and sentimentality are given their rightful stresses. It is not an easy book to read at first sight. But what great work of art has ever been found easy at first sight?

With those two irrepressibles, Caryl Brahms and S. J. Simon, we plunge into the Victorian scene in **DON'T, MR. DISRAELI** (Michael Joseph. 8s. 6d.). Stuffed birds, antimacassars, hansom cabs, leaves from the highland diary, Thomas Babington, Alfred the Laureate, the G.O.M., and Dizzy himself are but few of the props to hand for this lively farce. Not that they are content with all this stuff and plus.

Not a bit of it. In fact, that isn't the half of it. None of their books would be complete without their own Strogarloff. What is surprising is to find in the supporting cast, Harpo Marx, Compton Mackenzie, H. G. Wells, Max Beerbohm, Lady Caroline Lamb, Sherlock Holmes, W. G. Grace and Donald Duck.

What is even more surprising is that these, and other anachronistic characters, fit perfectly into the crazy mosaic, with the result that the book breathes throughout a truer essence of Victorianism than many more serious studies of that much studied period.

It is a farrago of hilarious nonsense, but like many another piece of nonsense that has survived there are evidences of shrewd and pointed satire. Nor is it all pointed at the much satirised Victorians. There is a bit about Lewis Carroll which some modern publishers might, for the benefit of hungry generations of authors, paste in their hats.

Henrietta Maria, youngest daughter of Henri IV, was born at a time when great events were stirring in Europe. Her birth, upbringing and education were to play an important part in the years in which she was destined to become the consort of a Stuart King of England.

In **QUEEN OF TEARS** (Collins. 15s.) Miss Jane Oliver tells the story of a woman of spirit, stubborn, wilful and wayward, yet a loving and devoted wife, who, with the best intentions, became the evil genius of Charles I. Charles himself is an interesting character study, with his personal charm, his lack of judgment both in men and in affairs, his almost unassailable stupidity, his integrity, and his courage.

A wiser woman than Henrietta might have saved him, but if there was bad advice to be given she gave it; if there were fatal intrigues to be indulged in she went into them. Never were there two more loving and tragic figures marching stubbornly to their doom.

Henrietta makes a good subject for a modern biography, and Miss Oliver brings her to life in a lively and not unattractive portrait. Skilfully, too, she handles the elusive character of Charles, and indeed creates sympathy (although this may not have been the intention) for those two poor creatures of tragic destiny. Brilliantly, too, she introduces the younger Charles and the other children. The book is also rich in the atmosphere of the England of the Civil War, of the contemporary scenes in exile and in a host of subsidiary but lively characters.

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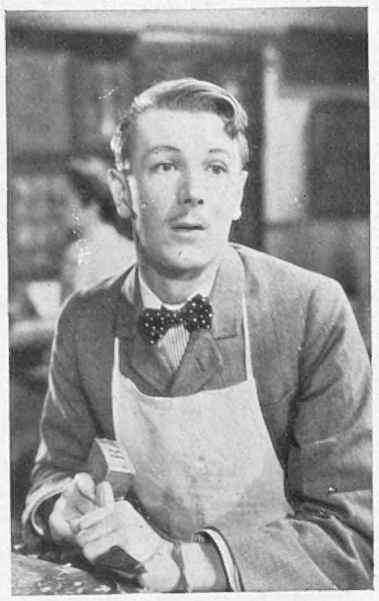
FILM NEWS from STUDIO and CINEMA :

"Kipps" in Production at Shepherd's Bush : Ginger Rogers Comes to the Gaumont; and Gary Cooper to the Carlton

DIANA WYNYARD AS HELEN WALSINGHAM IN "KIPPS": Diana Wynyard plays the wealthy girl who takes the aspiring Kipps under her social wing in the film version of *Kipps*, H. G. Wells' early novel. The film is being directed by Carol Reed



KIPPS JOINS THE WOOD-CARVING CLASS: Michael Redgrave takes the part of Kipps, the simple soul who is a master of bad English, in the Twentieth Century production at Shepherd's Bush

CAROL GARDINER WEARS A WONDERFUL HEADDRESS IN "KIPPS": The period of *Kipps* is allowing the producer to revel in some Victorian headgear

RONALD COLMAN WITH THE FASCINATING GINGER ROGERS AT THE GAUMONT, HAYMARKET: They make an attractive pair in this Sacha Guitry story of a carefree artist and a bookshop assistant—a pleasant, sentimental film for these days. Ginger Rogers acts with charm and spirit. *Lucky Partners* is a most amusing distraction at the present time

THE CARLTON THEATRE OPENS WITH A TECHNICOLOUR FILM: So good was *North-West Mounted Police* held to be at a recent pre-view that the management of the Carlton decided to reopen the theatre with this stirring story of the scarlet-coated police and the part they played in the Riel rebellion in 1885. *Above* is seen Gary Cooper as the Ranger

The action of *North-West Mounted Police* takes place in the Canadian North-West. French and Scottish pioneers, who had begun pushing into this wilderness two centuries before, had bred with the Indians a new people, calling themselves the Metis Nation, and regarding the country as their own. Then the Government had sent in surveyors. Farms were split up, relocated, in some cases wiped out. In vain, the Metis people protested to Ottawa, and, finally, rallying behind a man named Louis Riel, patriot, dreamer and ex-school teacher, they struck for independence. Hordes of Cree and Blackfoot warriors were invited to join the revolt. And until regular troops arrived, the preservation of Canada devolved upon 500 scarlet-coated riders, the North-West Mounted Police. The Riel Rebellion is the background of the play, against which we see Gary Cooper, the Texas Ranger who has come North; Madeleine Carroll, and others act out a moving story

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THE CHRISTMAS NUMBER of "THE SPHERE"

The season of Christmas is approaching—already the shops and big stores are showing their special Christmas wares—and it is with pleasure that the Editor announces the publication of the Christmas Number of "The Sphere" on November 20. It appears in a richly designed cover by Millar Watt and within will be found a variety of Christmas fare which the Editor trusts will be found welcome by his readers. Pictures by Royal Academicians and other noted artists are reproduced in full colours; stories, articles, poems, carols, and competitions will, it is hoped, entertain the reader for many an hour. To make sure of securing a copy, the reader is advised to file his order with his newsagent at once

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In Quest of Good Hotels

By ASHLEY COURTENAY

THE quest of good hotels in war days is complicated by a number of issues. Firstly, one may stay at an hotel one week and hardly a week later hear that it has been "taken over" by the military, for a school, or some other purpose. For instance, my notes on Gogarth Abbey Hotel, Llandudno, were hardly in print when I heard unofficially that it has been requisitioned. Within the last few days, too, news has reached me that Lupton Hotel and the Dormie House, Churston Ferrars, Limpley Stoke Hotel, near Bath, and the Tollard Royal of Bournemouth are no longer available, and thus one's choice of hotels lessens almost daily.

A second difficulty we are faced with is that so many of the comparatively safe spots are full to overflowing and as a consequence one is forced to look farther afield, which in many ways is all to the good, for I have always contended that the prevalent idea that certain places are considered warm and others cold is often completely falsified by experience.

There is still room, and plenty of it, in the Roseland Peninsula of Cornwall, and though admittedly the town dweller might find the days hang heavily, it surely should be possible to adjust one's life in war-time in return for the privilege of sleeping in a comfortable bed at night instead of bedding down somehow in a shelter.

At St. Mawes there are two good hotels where accommodation can be obtained very reasonably—the Ship and Castle, and Idle Rocks Hotel. At, or rather overlooking, Portscatho is the very attractive Guest House Rosevine. Nearby is the Pendower Hotel perched on the cliffside, and here on the sands below I have many recollections of tanning one's face on December days.

Another place which is likely to come again into its rightful place as a winter resort is Bournemouth, which has suffered because of the ban placed on visitors by the authorities. Actually, the restrictions were only intended to restrict the summer holiday maker and not the winter visitor who really comes under the category of resident. Though some well-known hotels, such as Tollard Royal, have been requisitioned, there is plentiful accommodation left, and those who have been accustomed to winter in Bournemouth are advised to get in touch with the hotel of their choice, or if they will write to me I will get first-hand information for them.

Bournemouth has had the odd bomb or two, but what place hasn't? When the history of this war is told, one will then be able to tell of aerial torpedoes, bombs and land mines falling on all sorts of outlandish places, and Bournemouth, after London and other principal objectives, must seem like paradise.

Another part of the country which is likely to come into its own as a result of the need for peaceful nights is Scotland, and though I have not a great deal of first-hand information, I have noticed the announcements of a number of hotels well known to me—amongst them being the Castle Hotel, Glendevon, the Killin Hotel on Loch Tay, and the Royal Hotel, Tyndrum. Though many of the largest and best-known hotels have been requisitioned, there is no doubt that accommodation is to be had there.

I am beginning to get a number of inquiries concerning Christmas, but there are very few hotels accepting Christmas or New Year bookings as yet. In normal years Christmas and New Year are a welcome "Little Season" after a dull spell. But this year hotels are full *now*, and as the bookings are more in the nature of residents than visitors there is not likely to be much room for just the short holiday period visitor. Maybe nearer the time, hotels will know better what they can do about the usual Christmas demand, though I should be very glad to hear from any hotels now who would welcome Christmas and New Year inquiries.

ANSWERS TO CORRESPONDENTS

J. P., Isle of Wight.—The type of place you are seeking is without doubt the Royal Clarence Hotel, Exeter. There is a very good grill room and a cocktail lounge. They have occasional dances, though when you do want to escape from the ladies there is a smoke room reserved exclusively for men.

Mrs. F., Woking.—Recently I went over to Dawlish though I did not have time to go into the Sefton Hotel and find if Mrs. Peters has any room for you. But I did discover that you need have no qualms as regards night bombers or sleepless nights, nor is it a point that is feasible from an invasion standpoint.

T. W., London.—Good hotel accommodation near London is not easily come by, but here are three places which should suit you if you can get in: the Crown Hotel, East Burnham, Bucks; the Treble House, a Guest House, at Blewbury, near Wantage; and Mead Corner, another Guest House, at Moulsford.

T. I., Sidmouth.—The question of tipping has always been a vexed one, and I am decidedly in favour of the Continental system of 10 per cent. being added to one's bill. At the Redcliffe Hotel, Paignton, where it is in operation, it works quite well. Certainly the staff seem contented, and are very willing. The trouble is when the public spoil the market by tipping individually as well.

E. D. F., Ongar.—You have raised another vexed question, in regard to dogs. It is difficult for hotels to entirely refuse them, but it would be better if they could, because it often leads to growls both from the dogs and their owners. The average price where food is provided for the dog is 2s. a day, but it must be remembered that it is difficult to provide meat at any price. The charge for dogs does not only include the food provided but goes in a small way for the extra work dogs cause, for even the best behaved dogs have thoughtless owners and most hotels have had experience of little pets being allowed on the beds and being washed in the bathroom, besides being allowed to occupy the best chair in the lounge. There are few hotels which are adaptable for doggy visitors, though there are few which entirely refuse them.

Mr. Ashley Courtenay is always pleased to advise "Sphere" readers of hotels, both large and small, known to him personally. Letters, accompanied by a 2½d. stamp for reply, should be addressed to him, c/o the Editor, THE SPHERE, *32–34, St. Bride Street, London, E.C.4. Personal and telephone inquiries, however, cannot be accepted.*

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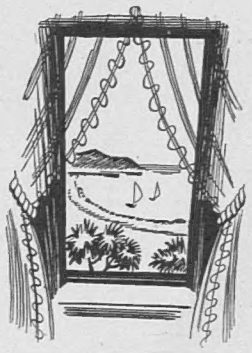

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